ANDHRA PRADESH SOLAR POWER CORPORATION PRIVATE LIMITED
(A J V COMPANY OF GOVT OF ANDHRA PRADESH AND GOVT OF INDIA)

KADAPA ULTRA MEGA SOLAR PARK (1000 MW)

BIDDING DOCUMENT
FOR THE WORK OF

Name of work: **APSPCL – APTRANSCO CSR Funds - Extension of Community centre along with balance works at S.Uppalapadu village of Jammalamadugu Mandal of Kadapa Dist. A.P.**

SINGLE PART BID
TENDER SPECIFICATION

NOTICE INVITING TENDERS (NIT) NO.
APSPCL-e-C- 25/2023-24/EE/Civil/APSPCL, Dt. 21.02.2024

ANDHRA PRADESH SOLAR POWER CORPORATION PRIVATE LIMITED
KADAPA ULTRA MEGA SOLAR PARK (1000 MW)

TENDER NOTICE
Tender Notice No. APSPCL-e-C- 25/2023-24/EE/Civil/APSPCL, Dt. 21.02.2024

1.	Department Name	Andhra Pradesh Solar Power Corporation Private Limited (**A J V Company Of Govt. Of Andhra Pradesh And Govt. Of India**)
2.	Circle/Division Name	Executive Engineer / Civil / APSPCL / Guntur
3.	Tender Notice No.	**APSPCL-e-C- 25/2023-24/EE/Civil/APSPCL, Dt. 21.02.2024**
4.	Name of Work	**APSPCL – APTRANSCO CSR Funds - Extension of Community centre along with balance works at S.Uppalapadu village of Jammalamadugu Mandal of Kadapa Dist. A.P.**
5.	Estimated Contract Value (Approximately)	**Rs. 33,83,594/- (Rupees Thirty Three Lakh Eighty Three Thousand Five Hundred and Ninety Four Only)**
6.	Period of Contract	3 Months
7.	Form of Contract	L.S
8.	Tender Type	Open
9.	Tender Category	Works
10.	Transaction Fee Payable to MD/APTS payable at Vijayawada (including GST)	**Rs. 1,198/- (Rupees One Thousand One Hundred and Ninety Eight Only)**
11.	Bid Security (EMD)	**Rs. 34,000/- (Rupees Thirty Four Thousand Only)**
12.	Bid Security Payable to	By way of online payment in favour of Managing Director/APSPCL/ Tadepalli.
13.	Process Fee	Not Applicable
14.	Schedule Available Date & Time	21.02.2024, 6.30 P.M.
15.	Schedule Closing Date & Time	29.02.2024, 10.30 A.M.
16.	Bid Submission closing Date & time	29.02.2024, 10.35 A.M.
17.	Bid Submission	**Online**
18.	Bid Validity	180 days from the date of opening of the Bid
19.	Pre Bid Meeting	Not Applicable
20.	Pre Qualification/ Technical Bid Opening Date (Qualification and Eligibility Stage)	No separate technical bids are required. The bidder shall submit qualification details along with price bid. The price bids will be opened only for those who meet the eligibility criteria.
21.	Price Bid Opening Date & Time	29.02.2024, 03.00 P.M. (The price bids will be opened after verification of eligibility criteria)
22.	Eligibility Criteria	**1. Registration** (i) The bidder shall be registered as Class - IV (Civil) or above in any State/Central Govt. or any State/Central PSU etc. (ii) Registration under process shall not be accepted.

		2. General **Responsibility for correctness of the information submitted in the online bid lies with bidder. If any information furnished in the bid is proved to be false at a later date, the bid will not only be rejected but the bidder will be BLACKLISTED.**
23.	Place of Opening of Tenders	In the chambers of Executive Engineer/ Civil/APSPCL, Flat no: 501, 5th Floor, Garuda Enclave, Beside TG Plaza, Tadepalli, Guntur-522501.
24.	Officer Inviting Bids	Executive Engineer/Civil/APSPCL/Guntur.
25.	Address &Contact Details	Executive Engineer/ Civil/APSPCL, Flat No. 501, 5th Floor, Garuda Enclave, Beside TG Plaza, Tadepalli (V&M), Guntur District-522501. Phone: +91-9848113328. E-Mail: eecivil.apspcl@gmail.com
26.	Procedure for bid submission	a) The tender should be in the prescribed forms which can be obtained from 'e' procurement platform from the date of electronic publication up to the time and date indicated in the tender notice. The intending bidders shall enroll themselves on the 'e' procurement market-place www.apeprocurement.gov.in Those contractors who register themselves in the 'e' procurement market place can download the tender schedules at free of cost. The bidders shall authenticate the bid with his digital certificate for submitting the bid electronically on 'e' procurement platform **and thebids not authenticated by digital certificate of the bidder will not be accepted on the e-procurement platform** following the G.O.Ms.No.6, I.T&C Department, dated. 28-02-05.
		b) Intending bidders can contact office of the Executive Engineer/ Civil/APSPCL/Tadepalli/ Guntur – 522501 for any clarification/information on any working day during working hours c) The bidders who are desirous of participating in e-procurement shall submit their bids etc., in the standard formats prescribed in the tender documents, displayed at "e" market place. The bidders should invariably upload the statement showing the list of documents etc., in the "e" market place in support of their Technical bids. The bidder should upload scanned copies of all relevant certificates. The bidder shall sign on all the statements, documents, certificates, uploaded by him, owning responsibility for their correctness / authenticity. d) The Bidder shall authenticate the bid with his digital certificate for submitting the bid electronically on e-Procurement Platform and the bids not authenticated by Digital certificate of the bidder will not be accepted on the e-Procurement platform. e) The Department shall carry out the bid evaluation solely based on the uploaded documents, online payment towards EMD in the e-procurement system. f) The Department will notify the successful bidder for submission of original hard copies of all uploaded documents, prior to issue of LOI. g) The successful bidder shall invariably furnish the Original Certificates/documents of the uploaded scanned copies to the Tender Inviting Authority before stipulated time given to him either personally or through courier or post and the receipt of the same within the stipulated date shall be the responsibility of

		the successful bidder. The Department will not take any responsibility for any delay in receipt/non-receipt of certificates /documents, from successful bidder before the stipulated time. On receipt of documents, the Department shall ensure the gentility of all certificates documents uploaded by the bidder in e-procurement system in support of the qualification criteria before issue of LOI. h) If any successful bidder fails to submit the original hard copies of uploaded certificates/documents within the stipulated time or if any variation is noticed between the uploaded documents and the hard copies submitted by the bidder, the successful bidder will be suspended from participating in the tenders on e-procurement platform for a period of 3 years.
		The e-procurement system would deactivate the user ID of such defaulting successful bidder based on the trigger /recommendation by the Tender Inviting Authority in the system. Besides this, the department shall invoke all processes of law including criminal prosecution of such defaulting bidder as an act of extreme deterrence to avoid delays in the tender process for execution of the development schemes taken up by the Government.
27.	Statutory Requirements	The tenderer shall fulfill the following statutory requirements. **a)<u>Labour Rules and Regulations</u>** The tenderer shall comply with all statutory labour rules and regulations for EPF, GIS/ESI, Labour cess, Contract labour rules, Workmen compensation etc., as may be applicable. **b) <u>GST</u>** The tenderer should have registration under GST in the state of Andhra Pradesh from concerned department. The rates are exclusive of GST. Applicable GST on date will be allowed on the work done price against submission of GST invoice.
28.	Other Payments to be made	Apart from the Bid Security (EMD) the tenderer shall be liable to pay the following amounts: **a)<u>Transaction Fee:</u>** The participating bidders have to pay transaction fee of 0.03% (subjected to a maximum of Rs. 10,000.00) on estimated contract value of work with GST @ 18% i.e., **Rs. 1,198/- (Rupees One Thousand One Hundred and Ninety Eight Only)** in favour of MD/APTS payable at Vijayawada at the time of bid submission electronically. **b) <u>Corpus Fund:</u>** Successful bidder has to pay Corpus fund @ 0.04% (subjected to a maximum of Rs. 10,000.00 for works with ECV/QV up to Rs 50.00 Crores and Rs 25,000.00 for works with ECV/QV more than Rs 50.00 Crores) through Online Payment in favour of Managing Director, APTS, Vijayawada towards corpus fund at the time of concluding agreement.
29.	Documents to be submitted to the Tender inviting authority.	All the bidders shall upload the scanned copies of the following documents on e-procurement system 1) Online payment for EMD amount – This will be the primary requirement to consider the bid responsive. – Mandatory. 2) Contractor registration certificate – Mandatory.

		Other optional documents: 1. Registration copies of EPF, ESI/Insurance. 2. IT Returns, GST & PAN Registration. Note: 1. The tenderer is liable to be disqualified, if he is found to have mislead or furnished false information in the forms/ Statements/Certificates submitted in proof of qualification requirements and record of performance such as abandoning of work, not properly completing of earlier contracts, inordinate delay in completion of works, litigation history, financial failures and or participated in the previous tendering for the same work and has quoted unreasonable high price etc. 2. Even while executing the work, if found that the contractor had produced false/fake certificates, he will be black listed and the contract will be terminated and his Bid security will be forfeited and work will be carried out through other agency at his cost and risk.
30	Other relevant information	1. APSPCL reserves the right to reject any or all the tenders without assigning any reasons thereof. 2. APSPCL reserves the right to amend or modify the tender and its conditions before 26.02.2024, 4.00 P.M. (The details will be updated in APSPCL web site) 3. Any other condition regarding receipt of tenders in conventional method appearing in the tender documents may please be treated as not applicable. 4. The contractors have to upload the information preferably in Zip format. 5. The contractors should upload the documents duly signing each and every paper. For all clarifications & guidance, the bidders may contact the Executive Engineer/ Civil/APSPCL/Tadepalli/ Guntur – 522 501.

Sd/-
EXECUTIVE ENGINEER/CIVIL

To
The Bidders through paper notification/web publication.

Copy submitted to
The Managing Director & CEO/APSPCL for favour of perusal.

Copy to:
1) Notice Board.
2) The Chief Financial Officer./APSPCL/Tadepalli for information.
3) The Deputy Executive Engineer/Civil/APSPCL/N.P.Kunta for information.
4) The Deputy Executive Engineer/Elec/APSPCL/Kurnool for information.
5) The Deputy Executive Engineer/Civil/APSPCL/Kadapa for information.

TENDER FORM

To
The Managing Director,
APSPCL, Tadepalli,
Guntur – 522501.

Sir,

I/We do hereby tender and, if this tender be accepted undertake to execute the work of "**APSPCL – APTRANSCO CSR Funds - Extension of Community centre along with balance works at S.Uppalapadu village of Jammalamadugu Mandal of Kadapa Dist. A.P.**" as shown in the drawings and as described in the specifications deposited in the office of the **Executive Engineer/ Civil/ APSPCL, Tadepalli, Guntur- 522501** with such variations by way of, alterations or additions to, and omissions from the said work and method of payment as are provided for in the "Conditions of Contract" **at the estimated contract value (ECV) PLUS (or) MINUS %** or such other sum as may be arrived at under the clause of the standard preliminary specification relating to "Payment on lump sum basis or final measurements at unit prices".

I/We agree to execute the work when the lump sum payment under the terms of agreement is varied by payment on measurement quantities.

I/We agree to keep the offer in this tender valid for a period of 180 days from the date of opening of tender and not to modify the whole or any part of it for any reason within the above period. If the tender is withdrawn by me/us for any reason whatsoever, within the validity period, the earnest money deposited by me/us will be forfeited to APSPCL.

I/We hereby distinctly and expressly declare and acknowledge that before the submission of my/our tender, I/We have carefully followed the instructions in the tender notice and have read the APSS and the Preliminary specifications therein and the APSS Addenda volume; and that I/We have made such examination of the contract documents and of the plan, specifications and quantities, and of the locations where the said work is to be done, and such investigation of the work required to be done, and in regard to the materials required to be furnished so as to enable me/us to thoroughly understand the intention of the same and the requirements, covenants, agreements, stipulations and restrictions contained in the contract and in the said plans and specifications and distinctly agree that I/We will not hereafter make any claim or demand upon the APSPCL based upon or arising out of any alleged misunderstanding or misconception or mistake on my/our part of the said requirements, covenants, agreements, stipulations restrictions and conditions.

If my/our tender is accepted, the earnest money shall be retained by the APSPCL as security for the due fulfillment of this contract. If upon written intimation to me/us by the Executive Engineer/Civil/APSPCL/Guntur, I/We fail to attend the said office before the end of the period specified on such intimation the tender will not be considered and if, upon intimation being given to me/us by the Executive Engineer/ Civil/APSPCL/Guntur of acceptance of my/our tender, I/We fail to make the additional security deposit or to enter into the required agreement as defined **in clause 4 of the detailed tender conditions,** then I/We agree to the forfeiture of the Earnest money; Any notice required to be served on me/us here under shall be sufficiently served on me/us personally or forwarded to me/us by post (registered or ordinary) or left at my/our address given herein. Such notice if sent by post be deemed to have been served on me/us at the time when in due course of post, it would have been delivered at the address to which it was sent.

I/We fully understand that the written agreement to be entered into between me/us and the APSPCL shall be the foundation of the rights of both of the parties and the contract shall not be deemed to be completed until the agreement has first been signed by me/us and then by proper officer authorized to enter into contracts on behalf of APSPCL.

I/We am/are professionally qualified and my/our qualifications are given below.

S.No.	Name	Qualifications

I/We will employ at my/our own cost at least **1 (One) number Graduate Engineer** and other technically qualified staff in adequate numbers on full time basis and see that they are available at work site during working hours and also whenever required by the Engineer in-charge to take instructions and for arranging efficient and expeditious execution of work to the satisfaction of the Engineer-in-charge. In case we fail to employ the above mentioned technical staff we are agreeable for the recovery towards such default to be made from our bills at the rate of **Rs.50,000/- (Rupees Fifty Thousand only) per month or part thereof.**

The APSPCL directs that in the case of both Lump sum and K2 contract of Rs. 50,000 and above in value, the contractor irrespective of his class shall be required to employ the personnel on the concerned works at his own cost whether technical skill is required or not.

The appointment of staff shall be on full time basis and they shall be available at the work site whenever required by the Engineer-in-charge to take instructions. The contractor shall deploy required technical personal in addition to the above as per actual needs and as directed by the Engineer-in-charge.

I/ We have accepted the rate of progress i.e., the construction programme for the work as envisaged in this tender specification.

PRE-QUALIFICATION REQUIREMENTS

- Not Applicable.

DETAILED TENDER NOTICE

1. Tenders in single part for the work of **"APSPCL – APTRANSCO CSR Funds - Extension of Community centre along with balance works at S.Uppalapadu village of Jammalamadugu Mandal of Kadapa Dist. A.P."** should be in the prescribed form which can be obtained from 'e' procurement platform from the date of electronic publication up to the time and date indicated in the tender notice. The intending bidders shall enroll themselves on the 'e' procurement market-place www.apeprocurement.gov.in. Those contractors who register themselves in the 'e' procurement market place can download the tender schedules free of cost. The bidder shall authenticate the bid with his digital certificate for submitting the bid electronically on e- procurement platform **and the bids not authenticated by digital certificate of the bidder will not be accepted on the e-procurement platform** following the G.O.Ms.No.6, I.T&C Department, dated. 28.02.2005.

The intending bidders can download tender specification and submit their tenders online at e-procurement market place viz., www.apeprocurement.gov.in. **The tender forms can be downloaded up to 10.30 AM on 29.02.2024. Bids can be submitted up to 10.35 AM on 29.02.2024 as per NIT.**

The Price Bids will be opened through e-procurement platform by the ***Executive Engineer/Civil/APSPCL/Tadepalli*** **on 29.02.2024 from 3.00 P.M** onwards as per NIT in his chambers at the address Flat no: 501, 5th Floor, Garuda Enclave, beside TG Plaza, Tadepalli, Guntur-522501**.** If the tender opening day happens to be a holiday the tenders will be opened at the same timings mentioned above on the next working day. The tenderers or their authorized agents are expected to be present at the time of opening of tenders.

Intending bidders can contact office of the *Executive Engineer/Civil/APSPCL/ Guntur* for any clarification/ information on any working day during working hours

The bidders who are desirous of participating in e- procurement shall submit their Technical bid/Price bid etc., in the standard formats prescribed in the tender documents, displayed at "e" market place www.apeprocurement.gov.in. The bidders should invariably upload the statement showing the list of documents etc., in the "e" market place in support of their Technical bids. The bidder should load scanned copies of all relevant certificates. The bidder shall sign on all the statements, documents, certificates, uploaded by him, owning responsibility for their correctness/authenticity. **Responsibility for correctness of the information submitted in the online bid lies with bidder. If any information furnished in the bid is proved to be false at a later date, the bid will not only be rejected but the bidder will be BLACKLISTED.**

The Bidder shall authenticate the bid with his digital certificate for submitting the bid electronically on e-Procurement Platform and the bids not authenticated by Digital certificate of the bidder will not be accepted on the e-Procurement platform.

The Department shall carry out the technical bid evaluation solely based on the uploaded documents in the e-procurement system and open the price bids of the responsive bidders.

The Department will notify the successful bidder for submission of original hard copies of all uploaded documents prior to issue of LOI.

The successful bidder shall invariably furnish the original Certificates documents of the uploaded scanned copies to the Tender Inviting Authority before issue of LOI either personally or through courier or post and the receipt of the same within the stipulated date shall be the responsibility of the successful bidder. The Department will not take any responsibility for any delay in receipt/non-receipt of certificates/documents from successful bidder before the stipulated time. On receipt of documents, the Department shall ensure the genuinity of the all other certificates documents uploaded by the bidder in e-procurement system in support of the qualification criteria before issue of LOI.

If any successful bidder fails to submit the original hard copies of uploaded certificates/documents within the stipulated time or if any variation is noticed between the uploaded documents and the hard copies submitted by the bidder, the successful bidder will be suspended from participating in the tenders on e-procurement platform for a period of 3 years.

The e-procurement system would deactivate the user ID of such defaulting successful bidder based on the trigger/recommendation by the Tender Inviting Authority in the system. Besides this, the department shall invoke all processes of law including criminal prosecution of such defaulting bidder as an act of extreme of the deterrence to avoid delays in the tender process for execution of the development schemes taken up by the Government.

2. The bidder shall fulfill the following statutory requirements.

a) **Income tax Clearance Certificate:**

The contractor shall furnish their copy of permanent Account Number (PAN) card and copy of latest income tax returns submitted along with the proof of receipt.

b) **Labour Rules and Regulations:**

The contractor shall comply with all statutory labour rules and regulations for EPF, GIS/ESI, Labour cess, Contract labour rules, Workmen compensation etc., as may be applicable.

c) **Goods and Services Tax:**

The tenderer should have registration under GST in the state of Andhra Pradesh from concerned department. Applicable GST as on date is 18% of total value of the contract.

3. All the bidders shall invariably upload the scanned copies of the following documents on e-procurement system.

1) Online Payment for EMD amount - This will be the primary requirement to consider the bid responsive – Mandatory.
2) Contractor registration certificates – Mandatory.

Other Documents to be uploaded:

1) Registration copies of EPF, ESI/Insurance.
2) IT Returns, GST & PAN Registration.

Bid evaluation of the tenders would be done based on the certificates/ documents uploaded towards qualification criteria furnished by him/them.

In case of proprietary or partnership firm, it will be necessary to produce the certificates afore mentioned for the proprietor or proprietors and for each of the partners, as the case may be.

4. Earnest Money Deposit:
Each bidder must pay Bid Security i.e., Earnest Money Deposit of Rs.34,000/- (Rupees Thirty Four Thousand Only) while submitting their bids. The EMD shall be paid by way of online payment in favour of Managing Director/APSPCL and payable at Tadepalli.

i. The Earnest Money Deposit will be refunded to the unsuccessful tenderer after intimation of the rejection of the tender or at the expiration of 180 days from the date of tender whichever is earlier.
ii. The Earnest Money will be retained in the case of successful tenderer and will not carry any interest. It will be dealt with as provided in the tender.
iii. Tenderers are not permitted to withdraw their or his offer once made for a period of 180 days after the opening of the tenders and in the event of such tenderers withdrawing their tenders' within180 days after opening of tenders, the Earnest Money deposited by him/them will be forfeited by the APSPCL

4.1 In addition to the EMD, the balance amount of total up to 5% of the value of contract shall be paid by the successful tenderer as security deposit by way of Bank Guarantee/Demand Draft from Nationalized Bank approved by APSPCL as per proforma appended at the time of entering into the agreement. The above security deposit shall be furnished within fifteen (15) days from date of receipt of award. Further, 5% of the value of work done will be recovered as retention amount from the running bills for the due fulfillment of the contract.

The Security deposit (including EMD) & Retention amount will be refunded to the contractor after satisfactory completion of performance guarantee period as all defects shall have been made good according to the true intent and meaning thereof. The guarantee period commences from the date of completion of the work in all respects satisfactorily.These amounts will not bear any interest.

4.2 Failure to enter into the required agreement or to make the security deposit as defined in the above paragraphs shall entail forfeiture of the earnest money deposit. The written agreement to be entered in between the contractor and the APSPCL shall be the foundation of the rights of both the parties and the contract shall not be deemed to be complete until the agreement has first been signed by the contractor and then by the proper officer authorized to enter into contracts on behalf of APSPCL.

4.3 The work shall be commenced from the dates specified by APSPCL, otherwise EMD will be forfeited.

If the successful tenderer fails to sign the agreement or otherwise commit default, the APSPCL shall have the right to recover damages according to law apart from forfeiting the earnest money deposit.

5. Period of contract: 3 Months.

5.1 Programme of work

The attention of the tenderer is directed to the contract requirements as to the time of beginning the work, the rate of progress and the dates for the completion of the whole work and its several parts.

The programme of work to be done from time to time is indicated below. However, the Executive Engineer / Engineer-in-charge of the work will decide the priority of various items of work and their location and direct the successful tenderer for execution so as to complete the entire work as required.

The date of commencement of this work will be the date on which the site is handed over to the Contractor. The agreement shall be concluded before the site is handed over to the contractor or before he draws any materials.

Further, it shall also be noted by the tenderer, if on any account, the work gets dislocated due to the site being not available for work on any day or due to any other reason, it is not binding on the APSPCL to pay any compensation to the contractor, but the corresponding extension of time will be granted to the contractor.

The construction programme for the works envisaged in the specification is indicated below:

S.No.	***Period after date of commencement***	***Cumulative Percentage of the work to be completed based on contract amount***	***Remarks***
(1)	**(2)**	**(3)**	**(4)**
1.	1 Months	30 %	
2.	2 Months	60 %	
3.	3 Months	100 %	

The periods entered in column (3) for the purpose of defining the rate of progress may be altered by the Engineer-in-charge or appropriate authority authorized by APSPCL to suit the requirements of project completion.

If, due to any other reason beyond the control of the contractor, the progress is slow during any period indicated above, the same shall be made up in subsequent periods and the programme shall be complied within minimum possible time.

The Executive Engineer / Engineer -in-charge shall direct the sequence and pace of the parts of the work and the contractor shall comply with them. Payment will be effected as per actual work completed and based on the approved mode of payment.

6. **TERMS OF PAYMENT:** Payment for running bills shall be made to the contractor progressively, based on certification of the Executive Engineer/ Engineer-in-charge.

Penalty: Action as per clause 60 and 61 of PS to APSS will be taken by the Executive Engineer / Engineer-in-charge if the contractor fails to adhere to the above programme of work.

Due to what so ever reasons, if work gets extended beyond the contract period, an amount equivalent to 5% of running account bill will be recovered in the extended period of contract from the running account bills and release or forfeiture of this in part or full will be dealt as per the approval of competent authority of APSPCL.

7. The **Executive Engineer/Civil/APSPCL**, or other sanctioning authority reserves the right to reject any tender in full or part or all the tenders without assigning any reason there for. The quoted percentage shall be binding on the tenderer even if the **Executive Engineer/Civil/APSPCL** awards part of the work.

8. TAXES, DUTIES, TOLLS AND SEIGNIORAGE:

The contractor shall, unless otherwise specially stated in the tender notice and subsequently on this basis in the contract, be responsible for the payment wherever payable of all import duties, octroi duties, seigniorage, quarry fees etc. on all materials and articles that he may use.

All taxes, duties, seignorage and local cess charges, Turnover etc, except GST, EPF, GIS &LabourCess payable to the Govt./Quasi Govt.Bodies at the rates as on the date of opening of tender are deemed to be included in the quoted prices. **The applicable GST as on date will be paid extra on submission of GST invoice. The payment of GST is the responsibility of the contractor. Seignorage on metal, sand, gravel etc., and local cess**will be recovered at rates fixed by competent authority from time to time from the contract billsand the same will be remitted to Mines & Minerals Department. However, **Seignorage** charges will not recovered if the contractor submits the proof of payment of **Seignorage** charges to the concerned department. Statutory variations in the applicable rates or newly introduced taxes/duties, **Seignorage** and local cess will be to APSPCL account subject to the condition that the work has to be completed as per the time schedule stipulated in the contract/agreement.

The percentage less/excess on ECV quoted for the subject work shall beexcluding **GST, EPF, GIS, & Labour Cess. EPF & GIS** will be reimbursed by APSPCL on production of proof of actual remittances made and subject to the satisfaction of Engineer-in-Charge that the said contribution done is only for the workers employed on this work. Labourcess will reimbursed to the contractor as per actual on production of proof of payment as per the building and other construction welfare cess act 1996. APSPCL will not reimburse any excess payment made by the contractor for any of the above due to mis-interpretation of law or any other reason.

No GST will be collected from the contractor for the materials supplied by the APSPCL at free of cost.

Notwithstanding anything contained in Section 10 of the Indian Tariff Act, of 1894, the rates for item involving the use or supply of articles obtained by the contractor from outside India shall remain unaffected by any changes that may be introduced in the Customs duties.

Other taxes and duties levied by the Central/State Govt. prevailing as on the date of opening of tenders shall be to the contractor's account and the percentage less/excess on ECV value quoted shall be inclusive of them. Any increase in taxes and duties shall be to APSPCL's account. If there is any decrease in taxes and duties, credit shall be given to APSPCL to that extent.

The APSPCL will not however be responsible for payment any other tax made by the contractor under misapprehension of law.

9. Supplemental Items:

The contractor is bound to execute all supplemental items beyond 10% of agreement quantity, deducible from similar items in the original agreement and new items that are found essential, incidental and inevitable during execution of main works, at the rates to be worked out as detailed below.

a. Fixation of rates for items of work in excess of quantities in Schedule-A Bill of Quantities of tender

The percentage less/excess on ECV quoted by the tenderer shall hold good up to 10% of quantity over those given in Bill of Quantities. Approval of competent authority is to be obtained for execution of quantities in excess of 10% beyond agreement quantity and supplemental items and new items.

For all items of work which are in excess of 10% over and above the quantities shown in Schedule-A Bill of Quantities of the tender, the rate payable for such excess quantities shall be either agreement rates or sanctioned estimate rates plus or minus overall tender percentage accepted by the competent authority whichever is less.

b. Supplemental items directly deducible from similar items in the original agreement

The rates shall be derived by adding to or subtracting from the agreement rates of such similar items, the cost of the difference in quantity of material or labour between the new item and the similar item in the agreement worked out with reference to the schedule of rates adopted in the sanctioned estimate with which the tenders were compared plus or minus overall tender percentage.

c. New Items:

i) Similar items, the rates of which cannot be directly deduced from the original agreement.

ii) Purely new items which do not correspond to any item in the agreement.

The rate shall be estimate rate plus or minus overall tender percentage.

Note: in the term estimate rate used (i) and (ii) above means the rate in the sanctioned estimate with which the tenders were compared or if no such rate is available in the estimate, the rate derived with reference to the schedule of rates adopted in the sanctioned estimate with which tenders are compared.

d. Addition of provision towards importation of labour, labour amenities, dewatering etc., in working out supplemental items:

In respect of new items, the case has to be considered on its merits and provision for importation of labour, labour amenities, dewatering etc., has to be fully justified.

If the new item is in substitution of an old item which allowed for importation of labour, labour amenities, dewatering etc., those factors may be taken into account in computing the substituted items also at the same rates at which they were originally provided.

10.0 The clause 69 (b) of PS to APSS is deleted. The following may be read in its place:

"Whenever the withheld amount reaches Rs.1,000/- or a multiple thereof, the contractor may, at his option, to deposit with the Engineer-in-charge, an equal amount in sum of Rs.1,000/- or multiples thereof in any of the forms of interest bearing securities recognized for the purpose by A.P. Public Works Accounts Code and subject to the provisions therein contained or a Bank Guarantee of a Nationalized Bank in which case the equivalent withheld amount shall be paid to him forthwith."

The contractor will be permitted to exercise the option in this clause, subject to the condition that the rate of progress contained in the Articles of Agreement is properly maintained.

11.0 Preliminary specifications of APSS except clause 73 shall apply to all agreements entered by the contractor with APSPCL and shall form an inseparable condition of the contract. The tenderer is expected to examine closely the relevant specifications of the APSS and the special specifications and ISS before submitting his tender offer.

Note: In case of contradiction between the clauses included in this specification and the clauses of PS to APSS the former will prevail over the latter and is binding on the tenderer.

12.0 ARBITRATION

All or any disputes or differences arising out of or touching the order based on this specification shall be decided by a panel of arbitrators as detailed below and as per arbitration act No.1 of 1990 to the Arbitration Act 1940 amended vide G.O.No.7 dt.19-05-1990.

Value of claim	***Panel of Arbitrators***
Disputes involving amounts up to Rs. 10,000/- and below.	Superintending Engineer of the APGENCO other than the circle to which the disputes relate.
Disputes involving amount from Rs. 10,000/- to Rs. 50,000/-	Any Chief Engineer of the APGENCO other than concerned Chief Engineer.

There shall not be any reference of disputes, the value of which is above Rs.50,000/- to arbitration. The parties shall approach the competent Civil Courts having jurisdiction, if any such disputes shall arise.

TENDERER'S AND CONTRACTOR'S CERTIFICATE

a) We expressly state that we will be bound by the conditions of PS to APSS and that the contract shall be deemed to be concluded on the receipt of letter of acceptance. If thereafter we do not sign the contract or otherwise commit default, the APSPCL will be at liberty to forfeit the earnest money and recover damages in accordance with law.

b) We hereby declare that we have perused in detail and examined closely in the APSS all clauses of preliminary specifications and have either examined all the standard specifications for items for which we tender, before we submit such tender and we agree to be bound by and comply with all such specifications for all agreements which we shall execute in the APSPCL**.** We have signed here below in acknowledgement thereof.

c) We certify that we have inspected the location of the proposed work before quoting our percentage, we have also inspected the source of materials and network of roads and satisfied ourselves about the quality, availability and transport facilities for required materials through the net work of available roads and path-ways, required for the work and verified the correctness of the leads statement.

d) We are prepared to furnish detailed data in support of all our quoted percentage, when called upon to do so without any reservations.

Signature of Tenderer/contractor

Name :_____

Designation :_____

Company :_____

Date :_____

Seal of Company

SECTION - I

SUPPLEMENTAL CONDITIONS TO THE PRELIMINARY SPECIFICATIONS TO THE APSS

The following conditions shall also be followed in addition to those mentioned in P.S. to the A.P.S.S.

1. FUNCTIONING OF THE CONTRACT

The contractor shall carryout all directions and orders issued by the Executive Engineer / Engineer – in – charge connected with the work and shall communicate with him regarding all matters pertaining to the contract.

2. CONTRACT INCLUDES ALL NECESSARY OPERATIONS

The contractor is to include the whole of works whether permanent or temporary which are described in or implied by the contract documents, which may be inferred to be obviously necessary for the efficiency, stability and completion of the permanent works, also the performance of all other operations and the supplying of all materials and things described in or implied by the contract documents which may be deemed desirable or required for the completion in all respects of the above works to the entire satisfaction of the Executive Engineer / Engineer – in – charge and all such matters shall be deemed to be included in the contract.

Works shown in the drawings and not mentioned in the specifications or described in the specifications without being shown in the drawings shall nevertheless be held to be included in this contract, in the same manner as if they had been expressly shown in the drawings and described in the specifications also.

3. OTHER CONTRACTS FOR THE WORK:

Should the APSPCL enter into other contracts for specified items of the corporate work, each contractor shall co-operate with others to the fullest extent and shall allow each other every facility and co-ordination for execution of their works simultaneously and satisfactorily as intended in the designs, specifications and drawings. Should there be dispute or disagreement between the contractors for any cause whatsoever, the same shall be referred to the Executive Engineer / Engineer – in – charge whose decision regarding the co-ordination, co-operation, and facilities to be provided by any of the contractors to the others shall be final and binding on all parties and such a decision shall not vitiate any contract nor absolve the contractor of his responsibilities under the contract.

4. SAFETY MEASURES

The contractors shall take all necessary precautions for the safety of workers and in preserving their health while working in such jobs as require special protection and preventive steps. The following are some of the measures listed but the same are not exhaustive and the contractor shall add to and augment these precautions on his own initiative where necessary and shall comply with the directions issued by the Executive Engineer / Engineer – in - Charge in this behalf from time to time, and at all times.

i) Providing protective foot wear to workers in site situations like mixing and placing of mortar or concrete in places where the work is done under too much wet conditions.

ii) Taking necessary steps towards training the workers concerned on the machinery before they are allowed to handle them independently and taking all necessary precautions in and around the areas where machines, hoists and similar units are working.

SECTION - II

SITE CONDITIONS

1. LOCATION & GENERAL DESCRIPTION

Kadapa Ultra Mega Solar Park, Mylavaram site is situated at about 25 KM from Jammalamadugu and 50 KM from Proddatur. The nearest Railway station is Yerraguntla. Nearest town is Jammalamadugu. The project information and data is given below:

1.01	Owner / Purchaser	:	Andhra Pradesh Solar Power Corporation Private Limited (**A J V COMPANY OF GOVT OF ANDHRA PRADESH AND GOVT OF INDIA**)
1.02	Project Title :		Kadapa Ultra Mega Solar Park
1.03	Nearest Railway Station	:	Kadapa
1.04	Name of Railway	:	South Central Railway
1.05	Nearest Airport	:	Kadapa (70 KM from site)
1.06	Altitude	:	(+) 430 m EL above mean sea level
1.07	Climate	:	Tropical-Hot-Humid
1.08	**Ambient Temperature (Dry Bulb)**		
	a) Daily maximum (Mean)	:	33.0 Deg. C
	b) Daily minimum (Mean)	:	25.0 Deg. C
1.09	**Relative Humidity**		
	a) Maximum Humidity	:	64 percent
	b) Minimum Humidity	:	35 percent
	c) Average Humidity	:	49 percent
1.10	**Rainfall**		
	a) Maximum intensity	:	60 mm per Hour
	b) Annual Average	:	560 mm
	c) Tropical monsoon	:	June to October
1.11	**Wind Velocity & Pressure** (As per IS: 875-1987 Part III)		
	Basic Wind Speed	:	50 m/sec
1.12	Seismic Zone	:	Zone II as per IS: 1893-2002
1.13	**Transport**		
	a) Name of highway near Which the plant is located	:	Tadipatri – Jammalamadugu High way
	b) Railway (Gauge)	:	Broad Gauge.

2. SITE CONDITIONS

Before submitting the tender, the tenderer shall familiarize himself with the site conditions.

SECTION – III

RULES FOR PROVISION OF HEALTH AND SANITARY ARRANGEMENTS TO WORKERS

Rules for the provision of health and sanitary arrangements for workers shall be applicable to all classes of workers. The Contractor's special attention is invited to Clause 37, 38, 39 & 51 of PS to the APSS and he is requested to provide amenities like First Aid, Drinking Water etc at his own expense to the satisfaction of the Executive Engineer-in-Charge.

SPECIAL CONDITIONS OF CONTRACT

1.0 **GENERAL**

1.1 The word 'Special Conditions' shall be understood to cover all elements **effective in determining unit prices such as availability of materials,** price of materials, quantity and quality of available labour and their cost, or every other factor whatsoever, of major or secondary importance which has to be accounted for in quoting prices.

1.2 For the work covered by the Technical Specifications (Section IV) the bidder shall quote his percentage less/excess on ECV value based on the Bill of quantities (Schedule 'A') in words and figures.

Said percentage less/excess on ECV value shall bind on the bidders and shall include any expense whatsoever in connection with the delivery of materials at field site, the use of tools and equipment, cost of technical staff and labour and every other charge connected with and incidental to the complete and through execution of work.

1.3 The bidder shall make at his own risk and cost, before submitting his tender, all surveys he might consider necessary and he may carry out any market survey or technical enquiry he might require to check either the suitability of available materials or the site conditions, soil conditions etc. Permission to visit site will be granted to those bidders who have purchased the tender documents.

1.4 The contractor shall note that the scope of work and the quantity of individual items of work may vary to any extent (on the plus or minus side) as necessary during execution. The contractor shall be bound to execute all the works including above variation in quantity of individual items and extra items or additional items of work shall be executed by him as per the relevant clauses of the contract. In awarding the work against the subject specification to the contractor, APSPCL reservesthe right to take out of the scope of the contract part of the work. The contractors shall have no claim for loss of profit sustained because some portions of the original contract have been allocated elsewhere nor will this be reason for the contractors to increase/decrease the percentage for the remaining portion of the contract which he shall fulfill in accordance with the contract.

The preliminary estimated quantities given in the Schedule 'A' are not to be taken as binding figures and they may vary to any extent. These quantities have been provided only for the purpose of providing a comparison of various proposals and to give bidder approximate information as to the amount of work to be performed. The total value of work actually carried out shall be measured and paid for.

1.5 **Technical Specifications**

Technical specifications for major items are described in section IV of this document. For those items which may not be covered under Section IV, the contractors shall follow the relevant Indian Standard Specifications (latest edition) with the approval of the Engineer-in-charge/Engineer-in-Charge.

1.6 **Special Notes**

The contractor shall be responsible for any delay and damage except due to force majeure reasons which are generally beyond their control and for this full justification elaborating such circumstances shall be furnished by them.

1.7 The contractor shall be under no liability whatsoever for damage or destruction to the work or temporary work or materials and equipment or to property or like which is due to acts of God, earthquake, lightening, gale, typhoon, storm, hurricane, or act of any Government or Strikes or Lockouts or converted action of workmen or civil War (Whether declared or not) or sabotage explosion, Civil commotion, Police action, revolution, epidemics etc., destructive artesian conditions, nuclear fusion, or Radio active disturbances etc., which they have no control and directly or indirectly affecting the operation of the contract.

2.0 **Tenders quoted abnormally less, i.e., more than 15%, a B.G obtained in favour Managing Director/APSPCL on the any Nationalized bank or scheduled bank payable at Tadepalli for the difference between the tendered amount and 85% of the estimate value shall be furnished by the contractor invariably as additional security deposit. The period of validity of B.G shall be for a minimum period of six months. This B.G. shall not bear any interest. On successful completion of the work, the B.G. will be returned to the contractor. The period of validity shall be extended by the contractor from time to time till the B.G. is returned.**

In case of contractors failing to complete the work at agreement rates, the B.G. furnished will be forfeited by the APSPCL

GENERAL CONDITIONS OF CONTRACT

1.0 DEFINITION & INTERPRETATIONS

In these general conditions of contract the following terms shall have the meanings assigned to them except where the context otherwise required.

1.1 "OWNER/CORPORATION means Andhra Pradesh Solar Power Corporation Pvt., Limited (A J V Company Of Govt., Of Andhra Pradesh And Govt., Of India) and shall include their legal representative, successors and permitted assignees.

1.2 The "Contractor" means the individual or firm or company whether incorporated or not, under taking for execution of works and shall include legal representatives of such individual or persons composing such firms or unincorporated company successors of such firms or company as the case may be, and permitted assignees of such individual or firm or company.

1.3 "Contract" means the notice inviting tender, the tender and acceptance there of and the formal agreement, if any, executed between Andhra Pradesh Solar Power Corporation Pvt., Limited and the contractor together with the documents referred to therein including those conditions with appendices and any special conditions, the specifications, designs, drawings, schedule of quantities with rates and amounts and schedule of rates. All these documents taken together shall be deemed to form one contract and shall be complementary to one another.

1.4 The "Engineer-in-charge" means the engineering officer appointed by the corporation or his duly authorized representative who shall direct, supervise and be in charge of the works for the purpose of this contract.

1.5 "Work" means the works to be executed in accordance with the contract.

1.6 "Specifications" means the specifications forming a part of the contract for materials and works for the execution of the contract and as amplified, added or specified by special specifications, if any.

1.7 "Site" means the lands and or other place on, under on or through which the work is to be executed under the contract including any other lands or places which may be allotted by the corporation or used for the purpose of the contract.

1.8 "Letter of Award" shall mean the official notice issued by the OWNER notifying the contractor that his tender has been accepted.

1.9 "Guarantee period" shall mean the period during which the contractor shall remain liable for repair of any defect of the works performed under the contract.

1.10 Where the context so requires, words imparting the singular only also include the plural and vice-versa.

1.11 Heading & marginal notes to those General conditions shall not be deemed to form part thereof or be taken into consideration in the interpretation or construction there of or of the contract.

1.12 All the documents pertaining to the contract including specifications, schedules correspondence etc., shall be written in English language.

2.0 CONTRACTOR TO INFORM HIMSELF THE FOLLOWING:

2.1 The contractor shall be deemed to have carefully examined all contract documents to his entire satisfaction. If he shall have any doubt as to the meaning of any portion of the contract documents, he shall, before signing the contract, set forth the particulars thereof and submit them to the corporation in writing in triplicate, in order that such doubts may be removed. The corporation will provide such clarification as may be necessary in writing to the contractor. Any information otherwise obtained from the corporation or the ENGINEER shall not in any way relieve the contractor of his responsibility to fulfill his obligations under the contract.

3.0 DISCREPANCIES AND ADJUSTMENT OF ERRORS:

3.1 If there are varying or conflicting provisions made in any documents forming part of the contract, the Managing Director shall be deciding authority with regard to the intention of document.

3.2 Any error in description, quantity or rate in schedule of quantities or any omission there from shall not vitiate the contract or release the contract from the execution of the whole or any part of the works completed therein according to the specification or from any of his obligations under the contract.

3.3 If on check, there found to be differences, between the percentage less/excess on ECV value given by the contractor in words and figures by him in the Schedule of quantities and general summary the same shall be adjusted in accordance with the following rules.

a) In the event of a discrepancy between description in words and figures quoted by a tenderer, the description in words shall prevail.

b) The under signed does not bind himself to accept the lowest or any tender. The undersigned reserves the right to reject any or all tenders without assigning any reason.

c) Persons tendering must acquaint themselves and satisfy as to the physical conditions prevailing at the site.

d) No telegraphic/Fax offers will be entertained and APSPCL Ltd will not consider any postal delay.

e) The APSPCL reserves the right of deleting any or all items of the works mentioned in the schedule without assigning any reasons thereof. The tenderer will not be eligible to claim any sort of compensation in this regard.

f) The contractor shall provide to his workmen the required safety appliances including protective clothing and guards such as helmets, safety shoes, hand gloves, masks, safety belts etc., for working in Hazardous areas which shall be identified by the Engineer-in-charge.

g) The contractor will be required to work either in hot or cold areas, near machines in operation otherwise involving special care on part of the contractor to see that the work is carried out with safety to the men and machines and without hampering the working of the concerned departments of the corporations.

4.0 SUBLETTING OF WORKS

4.1 The contractor shall not assign or sublet the contract or any part thereof, allow any persons to become interested therein in any manner whatsoever without the special written permission of Executive Engineer / Civil / APSPCL / Tadepalli. The contractor can sublet only up to a maximum of 50% of contract with the prior approval of Executive Engineer / Civil / APSPCL / Tadepalli. Any breach of this condition shall entitle the corporation to rescind the contract and also render the contractor liable for payment to corporation in respect of any loss or damage arising or ensuring from such cancellations. The permitted subletting of work by the contractor shall not establish any contractual relationship between the sub-contractor and corporation and shall not relieve the contractor of any responsibility under the contract. In the event of sufficient dues not being available to reimburse corporation for the expenditure incurred by it for the above contractor shall reimburse corporation for the same.

5.0 ELECTRICAL SAFETY REGULATIONS

5.1 In no circumstances shall the contractor interfere with the fuses and electrical equipment belonging to the APSPCL or other contractors. Before the contractor connects and electrical appliances to any Board or Socket belonging to other contractors or APSPCL shall:

a) Satisfy and obtain permission of the Engineer-in-charge to that effect.

b) No electrical cable used by the contractor will be disturbed without prior permission.

c) No weight of any description will be imposed on any such cable and no ladder or equipment will rest against or be attached to it. No work shall carry or any live equipment without PERMIT TO WORK.

6.0 FIRE PROTECTION

6.1 The work procedures that are to be used during the execution of work shall be those, which minimize fire hazards to the extent practicable. Combustible materials, combustible waste and rubbish shall be collected and removed from the site at least once in a day. Fuel oil, volatile or flammable materials shall be stored away from the work areas in safe containers. All the materials such as working drawings, documents etc., which are combustible but essential for the works to be executed shall be protected against combustion resulting from welding sparks, cutting, flanges and other similar fire sources, while doing welding, gas cutting work at elevated levels all care should be taken to protect sparks falling down by providing suitable coverage to avoid free fire and ensuring safety to personnel working in neighborhood.

7.0 SECURITY

7.1 The tenderer/Contractor shall have total responsibility for all equipment and materials in his custody, loose, semi-assembled and/or erected serviced overhauled by him at site. The Tenderer/Contractor shall make suitable security arrangements including deployment of security personnel to ensure the protection all materials, equipment and works from theft, fire, pilferage and any other damages and loss.

8.0 DEFECT LIABILITY

The contractor shall be responsible to make good and remedy at his own cost within such a period as may be stipulated by the Engineer-in-charge any defect observed during the course of execution or which may develop or may be noticed before the expiry of the period mentioned in the Guarantee clause on intimation of which has been sent to the contractor within seven days of expiry of the said period by a letter sent by hand or Registered post.

9.0 GUARANTEE:

9.1 The contractor shall guarantee that all items executed by him shall be free from all defects and workmanship up to completion of work in all respects.

9.2 APSPCL shall also be entitled to recover any losses direct or indirect incurred due to non-fulfillment of contractual commitment in this regard.

9.3 The Guarantee period shall be 24 (Twenty Four) months from the completion of the works in all respects.

10.0 URGENT WORKS

10.1 **If any urgent work (in respect where for the decision or Engineer-in-charge is final and binding) becomes necessary and the contractor is unable or unwilling at once to carry it out the Engineer-in-charge may by his own or other people, carry it out as he may consider necessary if the urgent work is such as a contractor is liable under the contract to carry out at his expense. All expenses incurred on it by the corporation shall be recoverable from the contractor and be adjusted or set off against any sum payable to him.**

SECTION – IV

TECHNICAL SPECIFICATIONS

1.00 GENERAL

1) This specification is to cover for the proposed work of **"APSPCL – APTRANSCO CSR Funds - Extension of Community centre along with balance works at S.Uppalapadu village of Jammalamadugu Mandal of Kadapa Dist. A.P."** promoted by M/s. Andhra Pradesh Solar Power Corporation Pvt., Limited.

2) Description of various items of work under this specification and nature of work in detail are given hereinafter. The complete work under this scope is referred to as CIVIL WORKS. List of various civil works covered given under the scope.

3) The work to be performed under this specification consists of providing all labour, materials, consumables, equipment, temporary works, temporary labour and staff colony, constructional plant, fuel supply, transportation and all incidental items not shown or specified but reasonably implied or necessary for the completion of the work, all in strict accordance with the specifications and including revisions and amendments thereto as may be required during the execution of the work.

4) All materials shall be arranged by the CONTRACTOR.

5) The scope shall also include setting up of complete testing laboratory, by the CONTRACTOR, in the field to carry out all relevant tests required for the civil works for the project.

6) The work shall be carried out according to the approved drawings by the APSPCL. Necessary layout and details are to be developed by the CONTRACTOR keeping in view the statutory & functional requirements and facilities of the proposed work. The quantities given in the Schedule of quantities are approximate and likely to change as per the approved drawings.

7) CONTRACTOR shall inspect the site, examine and obtain all information required and satisfy himself regarding matters and things such as access to site, communications, transport, right of way, the type and number of equipment and facilities required for the work, availability of local labour, materials and their rates, local working conditions, weather, flood levels, subsoil conditions, natural drainage , etc., The contractor shall organize his own arrangements to transport his equipment, men and materials so as to match the construction schedules. Ignorance of the site conditions shall not be accepted by the APSPCL as basis for any claim for compensation or extension of time. The submission of a bid by the CONTRACTOR will be construed as evidence that such an examination was made and any later claims / disputes in this regard to rates/lump sum quoted shall not be entertained or considered by the APSPCL.

1.1. The bidders shall resolve himself the local issues, if any, during the execution without any financial implications to APSPCL**.**

2.00 Statutory Requirement

CONTRACTOR shall comply with all the applicable statutory rules pertaining to Factory act, Fire safety rule of Tariff Advisory Committee, Water act for Pollution control, Explosives act etc. Provisions of Safety, health and welfare according to Factories act shall also be complied with. Statutory clearances and norms of State Pollution Control Board shall be followed. APSPCL will assist in obtaining the necessary clearances from other departments.

3.00 The specifications for various works should confirm to the relevant clauses of the APSS, Earth manual of USBR, MORD & MORTH and also to the special specifications included in the tender schedule. If there is any difference between them, the special specifications will be applicable. If for any item of work, detailed specifications are not indicated either in the technical specifications or in the APSS and Earth manual of USBR, MORD & MORTH then that work shall be carried out as per the instructions of Engineer-in-charge. The execution of work and tests to be conducted during construction and on the materials shall confirm to the latest relevant I.S codes.

4.00 SCOPE OF WORK:

In general broad scope of work consists of the following:

1) Earth work excavation in all kinds of soils / HDR.
2) Laying of Plain Cement concrete (1:4:8) using 40 mm HBG metal.
3) Construction of R.R masonry using hard stone in CM (1:6).
4) Filling of the basement area with excavated/ locally available earth.
5) Laying of vibrated RCC M20 grade design mix using 12 to 20 mm size HBG metal.
6) Providing High Yield Strength Deformed (HYSD)/ Thermo Mechanically Treated (TMT) / Mild steel (MS) steel bars.
7) Supply, fabrication and erection of Stanchions, Purnils, Grill Windows.
8) Providing roofing with 0.5mm thick galvanized/pre painted G.I. profiled sheets fixed to the purlins.
9) Construction of Brick Masonry in CM (1:6) with 2nd class Bricks.
10) Providing plastering with CM (1:5), 12 mm thick for INSIDE FACE AND OUTSIDE OF WALLS.
11) Painting the internal walls with two coats of Plastic Emulsion paint of Grade I.
12) Providing and fixing factory made uPVC white colour Casement cum fixed glazed door.
13) Providing and fixing factory made uPVC white colour Two track two panels sliding window.

The work shall complete in all respects under this specification shall include but not limited to the following.

5.00 EARTH WORK EXCAVATION IN ALL KINDS OF SOILS / HDR:

The firm shall Earth work excavation in all kinds of soils / HDR including boulders up to 0.3 m dia for foundation of structures as per drawing and technical specification, including removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling after completion of work with approved material as directed by the Engineer in Charge

5.01 MODE OF PAYMENT: The payment shall be made on the basis of Cum.

6.00 LAYING OF PLAIN CEMENT CONCRETE (1:4:8) USING 40 MM HBG METAL:

The firm shall Laying of Plain Cement concrete (1:4:8) using 40 mm HBG metal including cost and conveyance of all materials at all leads and lifts, ramming, consolidating, curing etc, complete for finished item of work as per directions of the Engineer-in-charge.

6.01 MODE OF PAYMENT: The payment shall be made on the basis of Cum.

7.00 CONSTRUCTION OF R.R MASONRY USING HARD STONE IN CM (1:6):

The firm shall Construction of R.R masonry using hard stone in CM (1:6) for foundations and basement of internal walls including cost and conveyance of all materials, all labour charges, incidental charges, curing , all leads and lifts etc., complete for finished item of work as directed by the Engineer in charge.

7.01 MODE OF PAYMENT: The payment shall be made on the basis of Cum.

8.00 FILLING OF THE BASEMENT AREA WITH EXCAVATED/ LOCALLY AVAILABLE EARTH:

The firm shall Filling of the basement area with excavated/ locally available earth including conveyance of earth, laying of earth carefully in the basement in layers of 150mm thick, compaction of earth, labour charges etc complete for finished item of work including cost and conveyance of all materials, all labour charges, incidental charges etc., complete for finished item of work as directed by the Engineer in charge.

8.01 MODE OF PAYMENT: The payment shall be made on the basis of Cum.

9.00 LAYING OF VIBRATED RCC M20 GRADE DESIGN MIX USING 12 TO 20 MM SIZE HBG METAL:

The firm shall Laying of vibrated RCC M20 grade design mix using 12 to 20 mm size HBG metal 50% each with minimum 300 Kgs of cement per cubic meter of concrete for columns, including scaffolding, shuttering, centering, machine mixing, vibrating, curing, finishing, all labour, hire charges of machinery, all leads and lifts etc., complete for finished item of work as directed by the Engineer-in-charge and as per SS No: 402 and 403 of APDSS but excluding reinforcement cost and its fabrication charges which will be paid separately.

9.01 MODE OF PAYMENT: The payment shall be made on the basis of Cum.

10.00 PROVIDING HIGH YIELD STRENGTH DEFORMED (HYSD)/ THERMO MECHANICALLY TREATED (TMT) / MILD STEEL (MS) STEEL BARS:

The firm shall Providing High Yield Strength Deformed (HYSD)/ Thermo Mechanically Treated (TMT) / Mild steel (MS) steel bars (Fe 415/ Fe 500 grade as per IS 1786-1979) of different diameters for RCC works , including labour charges for straightening, cutting, bending to required sizes and shapes, placing in position with cover blocks of approved material and size and tying and lap-splicing with binding wire of 18 SWG, forming grills for reinforcement work as per approved designs and drawings, including cost and conveyance of steel bars, including all wastages such as overlaps, couplings, chairs, spacer bars including cost and conveyance of all materials, all incidental, operational, labour charges etc., complete for finished item of work at all elevations.

10.01 MODE OF PAYMENT: The payment shall be made on the basis of MT.

11.00 SUPPLY, FABRICATION AND ERECTION OF STANCHIONS, PURNILS, GRILL WINDOWS:

The firm shall Supply, fabrication and erection of Stanchions, Purnils, Grill Windows and other required supporting structure of Jindal, Vizag, SAIL, Tata or any other equivalent make for laying of roof sheet as directed by the engineer-in-charge including cost and conveyance of all materials, labour charges, including painting two coats with synthetic enamel paint over one coat of red Oxide paint all leads and lifts etc complete finished item of work as directed by Engineer in Charge.

11.01 MODE OF PAYMENT: The payment shall be made on the basis of Kgs.

12.00 PROVIDING ROOFING WITH 0.5MM THICK GALVANIZED/PRE PAINTED G.I. PROFILED SHEETS FIXED TO THE PURLINS:

The firm shall Providing roofing with 0.5mm thick galvanized/pre painted G.I. profiled sheets fixed to the purlins with 14 size self drilling screws with neoprene washer, side laps are stitched with self tapping / drilling screws, end laps are to be sealed with 25x3mm Butyl tape, the sheets are provided with anticapillary grove including cost & conveyance of materials, all leads and lifts, all labour charges, scaffolding charges etc., complete for finished item of work and as directed by the Engineer-in-charge.

12.01 MODE OF PAYMENT: The payment shall be made on the basis of Sqm.

13.00 CONSTRUCTION OF BRICK MASONRY IN CM (1:6) WITH 2ND CLASS BRICKS:

The firm shall Construction of Brick Masonry in CM (1:6) with 2nd class Bricks in all floors including cost and conveyance of all materials., labour charges, Curing, all leads and lifts etc., complete for finished item of work as directed by the Engineer-in-charge and as per SS No: 501 and 503 of APDSS.

13.01 MODE OF PAYMENT: The payment shall be made on the basis of Cum.

14.00 PROVIDING PLASTERING WITH CM (1:5), 12 MM THICK FOR INSIDE FACE AND OUTSIDE OF WALLS:

The firm shall Providing plastering with CM (1:5), 12 mm thick for INSIDE FACE AND OUTSIDE OF WALLS in all floors of super structure in all heights including cost and conveyance of all materials, scaffolding, curing, labour charges, all leads and lifts etc., complete for finished item of work as directed by the Engineer-in-charge and as per SS No: 901 and 903 of APDSS.

14.01 MODE OF PAYMENT: The payment shall be made on the basis of Sqm.

15.00 PAINTING THE INTERNAL WALLS WITH TWO COATS OF PLASTIC EMULSION PAINT OF GRADE I:

The firm shall Painting the internal walls with two coats of Plastic Emulsion paint of Grade I of approved make and shade over one coat of white cement primer water base interior grade-1 (Asian/Berger/Nerolac) including cost and conveyance of cement primer and all materials, incidental charges, all leads and lifts at all heights for all floors etc., complete for finished item of work as directed by the Engineer-in-charge and as per SS No: 1208 of APDSS.

15.01 MODE OF PAYMENT: The payment shall be made on the basis of Sqm.

16.00 PROVIDING AND FIXING FACTORY MADE UPVC WHITE COLOUR CASEMENT CUM FIXED GLAZED DOOR:

The firm shall Providing and fixing factory made uPVC white colour Casement cum fixed glazed door with 3D hinges made of (big series) frame 67x64mm & sash 67x110mm both having wall thickness of 2.3 ± 0.2 mm and single glazing bead/double glazing bead of appropriate dimension casement/comprising of uPVC multi chambered frame, sash and mullion (wherever required) extruded profiles Duly reinforced with 1.60 ± 0.2mm thick

galvanized mild steel section made from roll forming process Of required length (shape & size according to uPVC profile), uPVC extruded glazing bead so appropriate dimension, EPDM gasket, zinc alloy (white powder coated) 3D hinges and one handle on each side of panels along with zinc plated mild steel multi point locking having transmission gear, cylinder with keeps and one side key, G.I fasteners 100x8mm size for fixing frame to finished wall and necessary stainless steels crews, etc. Profile of frame & sash shall be mitred cut and fusion welded at all corners, mullion (if required) shall be also fusion welded including drilling of holes for fixing hardware's and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealent over backer rod of required size and of approved quality, All complete as per approved drawing & direction of Engineer-in-Charge inclusive of cost of Single/Double glass panes and silicon sealent.

16.01 MODE OF PAYMENT: The payment shall be made on the basis of Sqm.

17.00 PROVIDING AND FIXING FACTORY MADE UPVC WHITE COLOUR TWO TRACK TWO PANELS SLIDING WINDOW:

The firm shall Providing and fixing factory made uPVC white colour Two track two panels sliding window made of (small series)frame 52 x 44 mm & sash 32 x 60 mm both having wall thickness of 1.9±0.2 mm and single glazing bead of appropriate dimension comprising of uPVC multi-chambered frame with in-built roller track and sash extruded profiles duly reinforced with 1.60±0.2 mm thick galvanized mild steel section made from roll forming process of required length (shape & size according to uPVC profile), appropriate dimension of uPVC extruded glazing beads and uPVC extruded interlocks, EPDM gasket, woolpile, zinc alloy (white powder coated) touch locks with hook, zinc alloy body with single nylon rollers (weight bearing capacity to be 40 kg), G.I fasteners 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screws, etc. Profile of frame & sash shall be mitred cut and fusion welded at all corners, including drilling of holes for fixing hardwares and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealent over backer rod of required size and of approved quality inclusive of cost of Single/double glass panes, wire mesh and silicon sealent, all complete for finished item of work as directed by the Engineer-in-Charge.

17.01 MODE OF PAYMENT: The payment shall be made on the basis of Sqm.

SCHEDULE – A

BILLOF QUANTITIES

a) The quantities given in the bill of quantities are approximate but they are subject to alterations, omissions, deductions or additions as provided for in the conditions of this contract and do not necessarily show the actual quantities of work to be done. The unit rates noted below are those governing payment of extras or deductions for omissions according to the conditions of the contract as set forth in the preliminary specifications of the A.P. Standard Specifications and other conditions and specifications of this contract.

b) It is to be expressly understood that the measured work is to be taken net (not withstanding any custom or practice to the contrary) according to the actual quantities when in place and finished according to the drawings or as may be ordered from time to time by the Engineer-in-charge and the cost calculated by measuring or weight at the respective prices without any additional charges for any necessary or contingent works connected therewith.

c) For all items of work which are more than 10% in excess of the quantities shown in the bill of quantities the rate payable for excess quantities beyond 10% shall be either tender rate or the SS rate for the item plus or minus the overall tender percentage whichever is less. The SS rate means the rate with in the estimate has been prepared for comparison with tenders.

d) The rates quoted by the contractor are firm till completion of the work in all respects. No price variation of rates is allowed in case of delay in handing over of site to the contactors, if any by the department. However, corresponding extension of time will only be granted to the contactors.

SCHEDULE - A							
Name of the work:- APSPCL – APTRANSCO CSR Funds - Extension of Community centre along with balance works at S.Uppalapadu village of Jammalamadugu Mandal of Kadapa Dist. A.P.							
S. No.	**Quantity**		**Description of item**	**Rate**	**Per**		**Amount**
1	125.00	Cum	Earth work excavation in all kinds of soils / HDR including boulders up to 0.3 m dia for foundation of structures as per drawing and technical specification, including removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling after completion of work with approved material as directed by the Engineer in Charge.	Rs. 148.00	1	Cum	Rs. 18,500.00
2	38.00	Cum	Laying of Plain Cement concrete (1:4:8) using 40 mm HBG metal including cost and conveyance of all materials at all leads and lifts, ramming, consolidating, curing etc, complete for finished item of work as per directions of the Engineer-in-charge.	Rs. 4621.00	1	Cum	Rs. 1,75,598.00
3	37.00	Cum	Construction of R.R masonry using hard stone in CM (1:6) for foundations and basement of internal walls including cost and conveyance of all materials, all labour charges, incidental charges, curing , all leads and lifts etc., complete for finished item of work as directed by the Engineer in charge.	Rs. 4,806.00	1	Cum	Rs. 1,77,822.00
4	190.00	Cum	Filling of the basement area with excavated/ locally available earth including conveyance of earth, laying of earth carefully in the basement in layers of 150mm thick, compaction of earth, labour charges etc complete for finished item of work including cost and conveyance of all materials, all labour charges, incidental charges etc., complete for finished item of work as directed by the Engineer in charge.	Rs. 566.00	1	Cum	Rs. 1,07,540.00

5	24.00	Cum	Laying of vibrated RCC M20 grade design mix using 12 to 20 mm size HBG metal 50% each with minimum 300 Kgs of cement per cubic meter of concrete for columns, including scaffolding, shuttering, centering, machine mixing, vibrating, curing, finishing, all labour, hire charges of machinery, all leads and lifts etc., complete for finished item of work as directed by the Engineer-in-charge and as per SS No: 402 and 403 of APDSS but excluding reinforcement cost and its fabrication charges which will be paid separately.	Rs. 10,464.00	1	Cum	Rs. 2,51,136.00
6	2.40	MT	Providing High Yield Strength Deformed (HYSD)/ Thermo Mechanically Treated (TMT) / Mild steel (MS) steel bars (Fe 415/ Fe 500 grade as per IS 1786-1979) of different diameters for RCC works , including labour charges for straightening, cutting, bending to required sizes and shapes, placing in position with cover blocks of approved materials from JSW,Vizag Steel, SAIL & TATA and size and tying and lap-splicing with binding wire of 18 SWG, forming grills for reinforcement work as per approved designs and drawings, including cost and conveyance of steel bars, including all wastages such as overlaps, couplings, chairs, spacer bars including cost and conveyance of binding wire, cover blocks and all incidental, operational, labour charges such as cutting, bending, placing in position, tying including sales and other taxes on all materials etc., complete for finished item of work at all elevations.	Rs. 88,985.00	1	MT	Rs. 2,13,564.00
7	8100.00	Kgs	Supply, fabrication and errection of Stanchions, Purnils, Grill Windows and other required supporting structure of Jindal, Vizag, SAIL, Tata or any other equvalent make for laying of roof sheet as directed by the engineer-in-charge including cost and conveyance of all materials, labour charges, including painting two coats with synthetic enamal paint over one coat of red Oxide paint all leads and lifts etc complete. complete finished item of work as directed by Engineer in Charge	Rs. 145.00	1	Kgs	Rs. 11,74,500.00

8	555.00	Sqm	Providing roofing with 0.5mm thick galvanized/pre painted G.I. profiled sheets fixed to the purlins with 14 size self drilling screws with neoprene washer, side laps are stitched with self tapping / drilling screws, end laps are to be sealed with 25x3mm Butyl tape, the sheets are provided with anticapillary grove including cost & conveyance of materials, all leads and lifts, all labour charges, scaffolding charges etc., complete for finished item of work and as directed by the Engineer-in-charge.	Rs. 950.00	1	Sqm	Rs. 5,27,250.00
9	46.00	Cum	Construction of Brick Masonry in CM (1:6) with 2nd class Bricks in all floors including cost and conveyance of all materials., labour charges, Curing, all leads and lifts etc., complete for finished item of work as directed by the Engineer-in-charge and as per SS No: 501 and 503 of APDSS.	Rs. 7419.00	1	Cum	Rs. 3,41,274.00
10	415.00	Sqm	Providing plastering with CM (1:5), 12 mm thick for INSIDE FACE AND OUTSIDE OF WALLS in all floors of super structure in all heights including cost and conveyance of all materials, scaffolding, curing, labour charges, all leads and lifts etc., complete for finished item of work as directed by the Engineer-in-charge and as per SS No: 901 and 903 of APDSS.	Rs. 328.00	1	Cum	Rs. 1,36,120.00
11	415.00	Sqm	Painting the internal walls with two coats of Plastic Emulsion paint of Grade I of approved make and shade over one coat of white cement primer water base interior grade-1 (Asian/Berger/Nerolac) including cost and conveyance of cement primer and all materials, incidental charges, all leads and lifts at all heights for all floors etc., complete for finished item of work as directed by the Engineer-in-charge and as per SS No: 1208 of APDSS.	Rs. 179.00	1	Sqm	Rs. 74,285.00
12	5.00	Sqm	Providing and fixing factory made uPVC white colour Casement cum fixed glazed door with 3D hinges made of (big series) frame 67x64mm & sash 67x110mm both having wall thickness of 2.3 ± 0.2 mm and single glazing bead/double glazing bead of appropriate dimension casement/comprising of uPVC multi chambered frame, sash and mullion (wherever required)	Rs. 9,805.00	1	Sqm	Rs. 49,025.00

			extruded profiles Duly reinforced with 1.60 ± 0.2mm thick galvanized mild steel section made from roll forming process Of required length (shape & size according to uPVC profile), uPVC extruded glazing bead so appropriate dimension, EPDM gasket, zinc alloy (white powder coated) 3D hinges and one handle on each side of panels along with zinc plated mild steel multi point locking having transmission gear, cylinder with keeps and one side key, G.I fasteners 100x8mm size for fixing frame to finished wall and necessary stainless steels crews, etc. Profile of frame & sash shall be mitred cut and fusion welded at all corners, mullion (if required) shall be also fusion welded including drilling of holes for fixing hardware's and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealent over backer rod of required size and of approved quality, All complete as per approved drawing & direction of Engineer-in-Charge inclusive of cost of Single/Double glass panes and silicon sealent.				
13	18.00	Sqm	Providing and fixing factory made uPVC white colour Two track two panels sliding window made of (small series)frame 52 x 44 mm & sash 32 x 60 mm both having wall thickness of 1.9±0.2 mm and single glazing bead of appropriate dimension comprising of uPVC multi-chambered frame with in-built roller track and sash extruded profiles duly reinforced with 1.60±0.2 mm thick galvanized mild steel section made from roll forming process of required length (shape & size according to uPVC profile), appropriate dimension of uPVC extruded glazing beads and uPVC extruded interlocks, EPDM gasket, woolpile, zinc alloy (white powder coated) touch locks with hook, zinc alloy body with single nylon rollers (weight bearing capacity to be 40 kg), G.I fasteners 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screws, etc. Profile of frame & sash shall be mitred cut and fusion welded at all corners, including drilling of holes for fixing hardwares	Rs. 7,610.00	1	Sqm	Rs. 1,36,980.00

			and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealent over backer rod of required size and of approved quality inclusive of cost of Single/double glass panes, wire mesh and silicon sealent, all complete for finished item of work as directed by the Engineer-in-Charge.				
ESTIMATED CONTRACT VALUE							**Rs. 33,83,594.00**

Note: The rate shall be exclusive of GST which will be reimbursed as per applicable rates.

SCHEDULE – B

Issue Rate of material:

Name of the Work: **APSPCL – APTRANSCO CSR Funds - Extension of Community centre along with balance works at S.Uppalapadu village of Jammalamadugu Mandal of Kadapa Dist. A.P.**

S.No.	Description of Item	Rate	Source of Supply
1	NIL	NIL	NIL

SCHEDULE – C

LEAD STATEMENT

Name of the Work: **APSPCL – APTRANSCO CSR Funds - Extension of Community centre along with balance works at S.Uppalapadu village of Jammalamadugu Mandal of Kadapa Dist. A.P.**

S.No.	Description of item	Source
1	Cement	Jammalamadugu
2	Sand	Jammalamadugu
3	All types of Aggregates	Gollapalli

Note: The above information given above is indicative only. The firm shall make his assessment regarding availability of above materials in adequate quantity and quality and the distance of the source etc., before quoting his rates and no claim will be entertained on this account afterwards.

SCHEDULE – D

LIST OF TENDER PURPOSE DRAWINGS ENCLOSED TO THIS SPECIFICATION

Name of the Work: **APSPCL – APTRANSCO CSR Funds - Extension of Community centre along with balance works at S.Uppalapadu village of Jammalamadugu Mandal of Kadapa Dist. A.P.**

S.No	TITLE

PARTICULARS OF TENDERER

Name of the Work: **APSPCL – APTRANSCO CSR Funds - Extension of Community centre along with balance works at S.Uppalapadu village of Jammalamadugu Mandal of Kadapa Dist. A.P.**

Name of the Tenderer/ Contractor:

Name of the contact person responsible for the work:

Designation/ Status of the contact person:

Contact Details of the person responsible for the work:

Mobile Phone No.

Office Phone No.

Residence Phone No.

Any Other Phone No.

Present Address:

Permanent Address:

BANK GUARANTEE PROFORMA

To,
The Managing Director,
APSPCL, Tadepalli.

Dear Sir,

Guarantee No :
Amount of Bank Guarantee :
Guarantee Cover From :
Last Date for Lodgment of Claim :

WHEREAS _____ (hereinafter called "the Contractor") has undertaken, in pursuance of _____ for the work of _____.

AND WHEREAS it has been stipulated by you in the said tender that Rs. _____of EMD amount shall be paid by the contractor for participating in the tender.

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of Rs._____, such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of Rs._____ (amount of Guarantee) as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the tender or of the Works to be performed there under or of any of the Contract documents which may be made between you and the contractor shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, addition or modification.

This Guarantee will remain in force up to and including the date _____any demand in respect of this guarantee should reach the Bank not later than the above date.

Not with standing anything contained herein above:

1. Our liability under this Bank Guarantee shall not exceed Rs. _____.
2. This Bank Guarantee shall be valid upto _____.
3. We are liable to pay the Guarantee amount or any part thereof under this bank guarantee only and only if the beneficiary / Govt. serves upon the Bank a written claim or demand on or before _____ (date of expiry of Guarantee).

It is in the best interest of the beneficiaries to check up the genuiness of the Guarantee with the branch you may contact us and you may confirm the guarantees through fax.

DATE: SIGNATURE OF THE BANK

SEAL

Witness 1 :
(Name & Address)

Witness 2 :
(Name & Address)

BANK ACCOUNT MANDATE FORM

ELECTRONIC CLEARING SERVICE (CREDIT CLEARING)/REAL TIME GROSS SETTLEMENT (RTGS) FACILITIY FOR RECEIVING PAYMENTS

A. DETAILS OF ACCOUNT HOLDER:

NAME OF ACCOUNT HOLDER	
COMPLETE CONTACT ADDRESS	
TELEPHONE NUMBER/FAX/E.MAIL	

B. BANK ACCOUNT DETAILS :

NAMEOF THE BANK	
BRACH NAME & ADDRESS	
WHETHER THE BRANCH IS COMPUTERISED?	
WHETHER THE BRANCH IS RTGS ENABLED ? IF YES, THEN WHAT IS THE BRANCH'S IFSC CODE	
IS THE BRANCH IS ALSO NEFT ENABLED ?	
TYPE OF ACCOUNT (SB/CURRENT/CASH CREDIT)	
COMPLETE BANK ACCOUNT NUMBER	

DATE OF EFFECT:_____

I hereby declare that the particulars given above are correct and complete. If the transaction is delayed or not effected at all for reasons of incomplete or incorrect information, I would not hold the APSPCL responsible.

Signature of Contractor

Date:
Certified that the particulars furnished above are correct as per our records.

Signature of Banker

(Bank's Stamp)
Date:

INTEGRITY PACT

Between

Andhra Pradesh Solar Power Corporation Private Limited hereinafter referred to as **"APSPCL",**

And

. . . . herein after referred to as **"The Bidder** / **Contractor"**

The APSPCL intends to call tenders and award the work under laid down organizational procedures, contract/s for the work of **"APSPCL – APTRANSCO CSR Funds - Extension of Community centre along with balance works at S.Uppalapadu village of Jammalamadugu Mandal of Kadapa Dist. A.P."**

The APSPCL and the Bidders shall value the full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness / transparency in bidding and as well as execution of contracts and both the parties shall adhere to the following.

1. **Commitments of the APSPCL**

    a. No employee of the APSPCL, personally or through family members, will in connection with the tender or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

    b. The APSPCL will, during the tender process treat all Bidder(s) with equity and reason. The APSPCL will in particular, before *and* during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

2. **Commitments of the Bidder(s)/ contractor(s)**

    a. The Bidder(s) / Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the APSPCL's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

    b. The Bidder(s) / Contractor(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

    c. The Bidder(s) / Contractor(s) will not commit any offence under the relevant IPC/PC Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the APSPCL as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

3. If the Bidder(s)/Contractor(s), before award or during execution commits a transgression through a violation of clause 2, above or in any other form such as to put his reliability or credibility in question, the APSPCL is entitled to disqualify the Bidder(s)/Contractor(s) from the tender process and exclusion in future tenders.

4. If the APSPCL disqualifies the Bidder(s) from the tender process prior to the award as per clause 3 above, the APSPCL is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.

5. If the APSPCL terminates the contract or if the APSPCL is entitled to terminate the contract according clause 3 above, the APSPCL shall be entitled to demand and recover from the contractor liquidated damages of the Contract value or the amount equivalent to Performance Guarantee.

6. The Bidder(s)/ Contractor(s) undertake(s) to demand from all subcontractors a commitment in conformity with this Integrity Pact.

7. The Integrity Pact begins from the date of tender notification and expires after the contractor receives the last payment under the contract.

_____ _____

(For & On behalf of the APSPCL) (For & On behalf of Bidder/ Contractor)

(Office Seal) (Office Seal)

Place ----------

Date ----------

Witness 1 :
(Name & Address)

Witness 2 :
(Name & Address)

Specification No. 402

Cement concrete for Plain and Reinforced work

402.1. Terminology :

402.1.1. *Controlled Concrete* :—Concrete for which the mix has been proportioned on the basis of trial mix based on preliminary tests.

402.1.2. *Ordinary Concrete* :—Concrete for which a nominal mix has been used without preliminary tests.

402.1.3. *Preliminary test* :— A test conducted in a laboratory on a trial mix with the object of designing a concrete mix before actual concreting operations or for determining the necessary adjustments during execution.

402.1.4. *Works test* :— A test conducted either on the field or in a laboratory on specimens made on the site out of concrete being used on the works.

402.1.5. *Proportioning* :— The determination of the mutual proportions of cement, aggregates, water and admixtures if any required to attain the desired workability, strength and any other special characteristics.

402.1.6. *Grade of Concrete* :— The letter M (Standing for 'mix') followed by a number indicating the specified 28-day works cube compressive strength of the mix expressed in Kg./cu.m^2.

402.2. Materials :

402.2.1. *Coarse aggregate* :—The aggregate of specified maximum size shall be graded and shall comply with SS : 108.

402.2.2. *Sand* :—This shall conform to SS : 110.

402.2.3. *Cement* :—Cement to be used, shall conform to the SS : 112.

402.2.4. *Water* :—Water used for both mixing and curing shall be fresh, clean and free from injurious amounts of deleterious materials. Potable waters are generally considered satisfactory for mixing and curing concrete.

402.2.5. *Admixtures* :—When specified only approved admixtures shall be used strictly in accordance with the Executive Engineer's instructions. Calcium chloride shall not be used for reinforced concrete.

402.3. Grades of Concrete :—The concrete shall be of seven grades designated as M 100, M 150, M 200, M 250, M 300, M 350 and M 400.

402.4. **Strength Requirements of concrete :**

402.4.1. Where ordinary portland cement conforming to SS : 112 is used the 28-day compressive strength requirements for various grades of concrete shall be as given in Table 402-A.

Table 402-A

Strength requirements of concrete (All values in Kg./cm²)

Grades of Concrete	*Compressive strength of 150mm. cubes at 28 days after mixing*	
	Preliminary test (minimum)	*Works test (minimum)*
M 100	135	100
M 150	200	150
M 200	260	200
M 250	320	250
M 300	380	300
M 350	440	350
M 400	500	400

Where rapid hardening portland cement is used the specified strength shall be attained at 7 days instead of at 28 days. Where other cements are used the Executive Engineer shall specify the corresponding requirements, preferably on the basis of preliminary tests.

402.4.2. The strength requirements specified in Table 402-A shall apply to both controlled and ordinary concrete. Preliminary tests need not however to be made in the case of ordinary concrete.

402.4.3. In order to get a relatively quicker idea of the quality of concrete optional works tests on beams for modulus of rapture at 72+2 hours or at 7 days, or compressive strength tests at 7 days may be carried out in addition to 28-day compressive strength tests. In all cases a 28-day compressive strength specified in Table 402-A shall alone be the criterion for acceptance or rejection of the concrete. If however, from tests carried in a particular job over a reasonably long period it has been established to the satisfaction of the Executive Engineer that a suitable ratio is got between the 28-day compressive strength and the modulus of rupture at 72 plus or minus 2 hours or 7 days or compressive strength at 7 days than in such cases compression strength at 7 days may be accepted. The Executive Engineer may suitably relax the frequency of 28-day compressive strength tests specified in Table 402-D provided the expected strength values at the specified early age are consistently met. For this purpose the values given in Table 402-B may be taken for general guidance in the case of concrete made with the ordinary portland cement.

Table 402-B

Optional works test requirements of concrete, (All values in kg./cm.)
(All tests conducted in accordance with IS : 516-1959)

Grade of concrete	Compressive strength on 150mm. cubes at 7 days Minimum	Modulus of ruptures by Beams test, Minimum	
		at 72 plus or minus 2 hrs.	at 7 days
M 100	70	12	17
M 150	100	15	21
M 200	135	17	24
M 250	170	19	27
M 300	200	21	30
M 350	235	23	32
M 400	270	25	34

402.4.4. Where the strength of a concrete mix as indicated by tests lies in between the strength for any two grades specified in Table 402-A, such concrete shall be classified for all purposes as a concrete belonging to the lower of the two grades between which its strength lies.

402.5. Proportioning and works control :

402.5.1. *Controlled concrete* :—As far as possible controlled concrete shall be used on all concrete works requiring a concrete of grade higher than M 200. Controlled concrete for use in plain and reinforced concrete shall be of grade M 100, M 150, M 200, M 250, M 300, M 350 and M 400.

402.5.1.1. The concrete mix shall be designed to have an average strength corresponding to the values specified for preliminary tests in Table 402-A. The proportions chosen shall be such that the concrete is of adequate workability for the conditions prevailing in the work in question and can be properly compacted with the means available. The maximum total quantity of aggregate by weight per 50kg. of cement shall not exceed 450kg. except where otherwise specifically permitted by the Executive Engineer.

402.5.1.2. Except where it can be shown to the satisfaction of the Executive Engineer, that supply of properly graded aggregate of uniform quality can be maintained over the period of work, the grading of aggregate shall be controlled by obtaining the coarse aggregate in different sizes and blending them in the proper proportions when required. The different sizes shall be stacked in separate stock piles. The materials shall be stock piled preferably one week before use. The grading of coarse and fine aggregates shall be checked as frequently as possible the frequency for a given job being determined by the Executive Engineer to ensure that the suppliers are maintaining the grading in conformity with that of the samples used in the preliminary test.

402.5.1.3. In proportioning concrete the quantity of both cement and aggregate shall be determined by weight. Where the weight of cement is determined by accepting the manufacturer's weight per bag a reasonable number of bags shall be weighed separately to check the net weight. When loose cement is weighted at the site it shall be weighed separately from the aggregates. Water shall be either measured by volume in calibrated tanks or weighed. All measuring equipment shall be maintained in a clean serviceable condition and their accuracy periodically checked.

402.5.1.4. It is most important to maintain the water cement ratio constant at its correct value. To this end determination of moisture content of both fine and coarse aggregates shall be made as frequently as possible, the frequency for a given job being determined by the Executive Engineer according to the weather conditions. The amount of the water added shall be adjusted to compensate for any observed variations in the moisture content. The moisture content in the aggregates shall be determined as specified in IS : 2386 (Part-III)-1963. To allow for the variation in weight of aggregates due to variation in their moisture contents suitable adjustments in the weights of aggregates shall also be made.

402.5.1.5. No substitution in materials used on the work or alterations in the established proportions except as permitted in clause 402.5.1.4. shall be made without additional tests to show that the quality and strength of concrete are satisfactory.

402.5.1.6. Workability of concrete shall be checked at frequent intervals. The slump test as described under clause 402.9.1 may be adopted for this purpose. Table 402-C gives suitable slumps for various conditions.

Table 402-C

Sl. No.	*Type of work*	*Slumps*	
		when vibrators are used	*when vibrators are not used*
A.	**Plain Concrete.**		
1.	Mass concrete in foundations, footings, retaining walls and pavements, etc.	10mm. to 25mm	50mm. to 75mm.
2.	Sections less than 75mm. thickness.	25mm. to 40mm.	75mm. to 100mm.
B.	**Reinforced Concrete.**		
1.	Mass concrete in foundations, footings and retaining walls, etc.	10mm. to 25mm.	75mm. to 100mm.
2.	Beams, slabs and columns etc., with normal amounts of reinforcement.	25mm. to 40mm.	100mm. to 125mm.
3.	Thin sections or section with congested reinforcement.	40mm. to 50mm.	125mm. to 150mm.

402.5.2. *Ordinary Concrete* :—When the use of controlled concrete is not considered practicable ordinary concrete may be used. The use of ordinary concrete shall however be restricted to grades M100, M150 and M200. The proportions for ordinary concrete shall be in accordance with Table 402-D.

Table 402-D

(Concrete mix Proportions)

Ordinary Concrete

Grade of concrete (1)	*Maximum total quantity of dry aggregates by volume per 50kg. of cement to be taken as the sum of the individual volumes of fine and coarse aggregate Litres* (2)	*Proportion of fine aggregate to coarse aggregate* (3)	*Maximum quantity of water per 50kg. cement Litres* (4)
M 100	300	Generally (1 : 2) for fine aggregate to coarse aggregate by volume but subject to an upperlimit of (1 : 1½) and a lower limit of (1 : 3)	34
M 150	220		32
M 200	160		30

402.5.2.1. The proportions of the aggregates shall be adjusted from upper limits to lower limits progressively as the grading of the fine aggregate becomes finer and the maximum size of coarse aggregate becomes larger. *Example* : For an average grading of fine aggregate the proportions shall be (1 : 1½), (1 : 2) and (1 : 3) for the maximum aggregate size of 10mm., 20mm. and 40mm. respectively.

402.5.2.2. M100, M150 and M200 of ordinary concrete correspond approximately to (1 : 3 : 6), (1 : 2 : 4), and (1 : 1½ : 3) nominal mixes currently used in the country.

402.5.2.3. In proportioning concrete the quantity of cement shall be determined by weight. The quantities of fine and coarse aggregates may be determined by Volume but these shall also preferably be determined by weight. In the later case the weight shall be determined from the volume specified in Table 402-D and the weight per litre of the proportioned by aggregates. If the aggregate is moist and volume batch is adopted allowance shall be made for bulking which shall be determined as follows: In a 250ml. measuring cylinder pour the damp sand and consolidate it dry shaking until it reaches the 200ml. mark. Then fill the cylinder with water and stir the sand well. The water shall be sufficient to submerge the sand completely. It may be seen that the sand surface is now below its original levels. Suppose the surface is at the mark 'Y' ml. The percentage of bulking of the sand due to moisture shall be calculated from the formula.

Percentage bulking=(200/y-1) x 100

402.5.2.3.1. The water cement ratios shall not be more than those specified in Table 402-D. Excess water reduces the strength of concrete and shall be avoided. The quantity required shall be carefully observed from time to time and reliable data worked out for guidance as the work proceeds. The cement content of the mix specified in Table 402-D for any nominal mix may be increased if the quantity of water in a mix has to be increased to overcome the difficulties of placement and compaction, so that the water cement ratio specified in Table 402-D is not exceeded.

402.5.2.3.2. In the case of vibrated concrete, the limit specified may be suitably reduced to avoid segregation.

402.5.2.3.3. The quantity of water used in the concrete mix for reinforced concrete work shall be just sufficient to produce a dense concrete of adequate workability which will surround and properly grip all the reinforcement. Workability of concrete shall be controlled by maintaining a water cement ratio that is found to give a concrete which by just sufficiently wet to be placed and compacted without difficulty with the means available.

402.5.2.4. Workability shall be controlled by direct measurement of water content with due allowance for any surface moisture in the coarse and fine aggregates. Clause 402.9.1 and Table 402-E give details of the slump test and recommended slumps for various conditions.

402.5.2.5. Allowances shall be made for surface water present in the aggregate when computing the water content. Surface water shall be determined by one of the field methods described in IS : 2386 (Part III)-1963. In the absence of exact data in the amount of surface water may be estimated from the values given in Table 402-E.

Table 402-F

Surface water carried by average aggregate

Aggregate	*Approximate quantity of surface water (litres per cubic meter)*
Very wet sand	120
Moderately wet sand	80
Moist sand	40
*Moist gravel or crushed rock	20 to 40

**Coarser the aggregate, less the water it will carry.*

402.5.2.6. If ordinary concrete made in accordance with the proportions given for a particular grade does not yield the specified strength due to proper quantities of materials not being available such concrete shall be classified as belonging to the appropriate lower grade. Ordinary concrete proportioned for a given grade in accordance with Table 402-D, shall not however be placed in a higher grade on the ground that the test strengths are higher than the minimum specified. No such interpolations shall be permitted.

402.6. Mixing :

402.6.1. *Machine mixing* :—Concrete shall normally be mixed in a mechanical mixer. Mixing shall be continued until there is a uniform distribution of materials and the mass is uniform in colour and consistency, but in no case shall the mixing be done for less than 2 minutes after all the materials are in the drum. When the mixing drum is charged by power loader all the mixing water shall be introduced into the drum before the soiled materials. The skip shall be loaded with about one half of the coarse aggregate, then with the fine aggregate, then with the cement and finally with the remaining coarse aggregate on top (if all-in-aggregate is used, the skip shall be loaded first with about one-half of the aggregate, then with the cement and finally with the remaining aggregate on top). Where the mixing drum is manually charged it shall be charged with the dry materials in a similar manner and the water shall be added immediately before the rotation of the drum is started.

402.6.2. *Hand Mixing* :—When hand mixing is permitted by the Executive Engineer it shall be carried out on a water tight, non-absorbent platform with a showel, trowel or a similar suitable implement. Care shall be taken to ensure that the mixing is continued until the mass is uniform in colour and consistency. The platform shall be large enough to enable atleast two batches to be mixed simultaneously. The following procedure shall be adopted while mixing.

(a) The cement and fine aggregate in the specified proportions shall be mixed dry until the mixture is thoroughly blended and is uniform in colour, with no pockets of sand or cement.

(b) As much quantity of coarse aggregate as can be mixed and laid within 15 minutes after water is added to the mixture shall then be laid on the dry platform and the required quantity of cement-sand mixture shall be spread over it. The whole mass shall then be mixed turning over atleast three times while adding the required quantity of water with a sprinkling can.

402.7. Placing and Compacting :

402.7.1. *Transporting* :—The concrete shall be handled from the place of mixing to the place of final deposit as rapidly as practicable by methods which will prevent the segregation or loss of any of the ingredients. If segregation does occur during transportation the concrete shall be remixed before being placed.

402.7.1.1. *Temperature control* :—During hot or cold weather concrete shall be transported in deep containers which on account of their lower ratio of surface area to mass reduce the rate of loss of water by evaporation during hot weather and loss of heat during cold weather. The temperature at the time of placement shall not be more than 104 °F or 40 °C and the depth of the concrete layer laid shall not exceed 600mm. when the temperature is 40 °C.

402.7.2. *Placing* :—The concrete shall normally be placed and compacted within half an hour of mixing and shall not be subsequently disturbed. Method of placing shall be such as to preclude segregation. All concrete which has set before placement shall be rejected and immediately removed from site.

402.7.3. *Placement under water* :—When it is necessary to deposit concrete under water, the method, equipment, materials and proportion of the mix to be used shall be approved by the Executive Engineer before the work is started. Such concrete shall not be treated as "controlled concrete". The concrete mix shall contain atleast 10% more cement than that required for the same mix placed in dry conditions, the quantity of extra cement varying with the conditions of placing. The volume or weight of the coarse aggregate shall not be less than one and half times, not more than twice that of the fine aggregate. The materials shall be so proportioned as to produce a concrete having a slump of not less than 100mm. and not more than 150mm. Coffer-dams or forms shall be sufficiently tight to ensure still water if practicable and in any case to reduce the velocity of water to less than 3m. per minute through the space into which concrete is to be deposited. Coffer-dams or forms in still water shall be sufficiently tight to prevent loss of mortar through the walls. Pumping shall not be done while concrete is being placed and until 24 hours thereafter. Concrete shall be deposited continuously until it is brought to the required height. While depositing, the top surface shall be kept as nearly level as possible and the formation of seams avoided. The methods to be used for depositing concrete under water shall be one of the following:

402.7.3.1. *Tremie* :—When concrete is to be deposited under water by means of a tremie the top section of the tremie shall be of a hopper large enough to hold the entire batch of the mix or the entire contents of the transporting bucket if any. The tremie pipe shall not be less than 200mm. in diameter and shall be large enough to allow a free flow of concrete are strong enough to withstand the external pressure of the water in which it is suspended even if a partial vacuum develops inside the pipe. Preferably flanged steel pipe of adequate strength required for the job shall be used. A separate lifting device shall be provided for each tremie pipe with its hopper at the upper end. Unless the lower end of the pipe is equipped with an approved automatic check value, the upper end of the pipe shall be plugged with a wadding of gunny sacking or other approved material before delivering the concrete to the tremie pipe through the hopper so that when the concrete is forced down from the hopper to the pipe it will force the plug (and along with it any water in the pipe) down the pipe and out of the bottom and thus establishing a continuous stream of concrete. It will be necessary to raise the tremie slowly in order to cause uniform flow of the concrete, but the tremie shall not be emptied so that water enters above the concrete in the pipe. At all times after the placing of the concrete is started and until all the concrete is placed the lower end of the tremie pipe shall be below the top surface of the plastic concrete. This will cause the concrete to build up from below instead of flowing out over the surface and thus avoid formation of laitance layers. If the charge in the tremie is lost while depositing, the tremie shall be raised above the concrete surface and unless sealed by a check value it shall be re-plugged at the top end (as at the beginning), before re-filling for depositing concrete.

402.7.3.2. *Drop bottom bucket* :—The top of the bucket shall be open. The bottom doors open freely downward and outward when tripped. The bucket shall be filled completely and lowered slowly to avoid backwash. It shall not be discharged until it rests on the surface upon which the concrete is to be deposited and when discharged shall be withdrawn slowly until well above the concrete.

402.7.3.3. *Bags* :—(of at least 0.028 cu.m. capacity) of jute or other coarse cloth shall be filled about two thirds full with concrete, the spare end being turned under so that the bag is square ended and securely tied. They shall be placed carefully in header and stretcher courses so that the whole mass is interlocked. Bags used for this purpose shall be free from deleterious materials.

402.7.4. *Construction joints* :—Concreting shall be carried out continuously up to construction joints, the position and arrangement of which shall be predetermined by the Executive Engineer. When the work has to be resumed on a surface which has hardened such surface shall be roughened by chiseling, swept clean, thoroughly wetted and covered with a 12mm. layer of freshly mixed mortar composed of cement and sand (in the same ratio as the cement and sand in the concrete) immediately before the placing of the concrete. When the concrete has not fully hardened all laitance shall be removed by scrubbing the wet surface with wire or bristle brushes, care being taken to avoid dislodgement of particles of aggregate. The surface shall be thoroughly wetted and all free water removed. The surface shall then be coated with neat cement grout. The first layer of concrete to be placed on the surface shall not exceed 150mm. in thickness and shall be well rammed against the old work, particular attention being paid to corners and close spots.

402.7.5. *Compaction* :—Concrete shall be thoroughly compacted during the operation of placing and thoroughly worked around the reinforcement, around embedded fixtures and into corners of form work. Wherever possible vibrators of the surface, form or immersion type shall be used. Over vibration or vibration of very wet mixes shall be avoided.

402.7.6. *Finishing* :—Exposed concrete is best finished while it is still green by floating. Concrete surfaces cast against forms shall normally not require any further finishing. If however, any defects are observed after removal of forms, any toughness or projections shall be removed by chipping and grinding with corborundum brick or a power grinding machine. Any hollows or honey combing shall be made good by the application of mortar having the same proportion as used in concrete and having as stiff a consistency as possible. No extra payment shall be involved for finishing concrete surfaces as mentioned above. If however for reasons other than defective work as mentioned above a cost of plaster has to be applied for which supplemental specifications are furnished, then the thickness and method of payment shall be defined in the schedule. Care shall be taken to roughen the hardened concrete surface by chiseling to get a good bond between the concrete surface and the plaster.

402.8. *Curing* :— Concrete shall be cured either by ponding or by covering with a layer of sacking-canvas, hessian or similar absorbent material which shall be kept constantly sprinkled with water. Alternatively the concrete being thoroughly wetted may be cured by a layer of approved water proofing material. Unless otherwise specified curing shall be continued for a period of three weeks.

402.9. Tests :

402.9.1. *Slump test* :—This test is used for measuring the workability of fresh concrete on the field as well as in the laboratory.

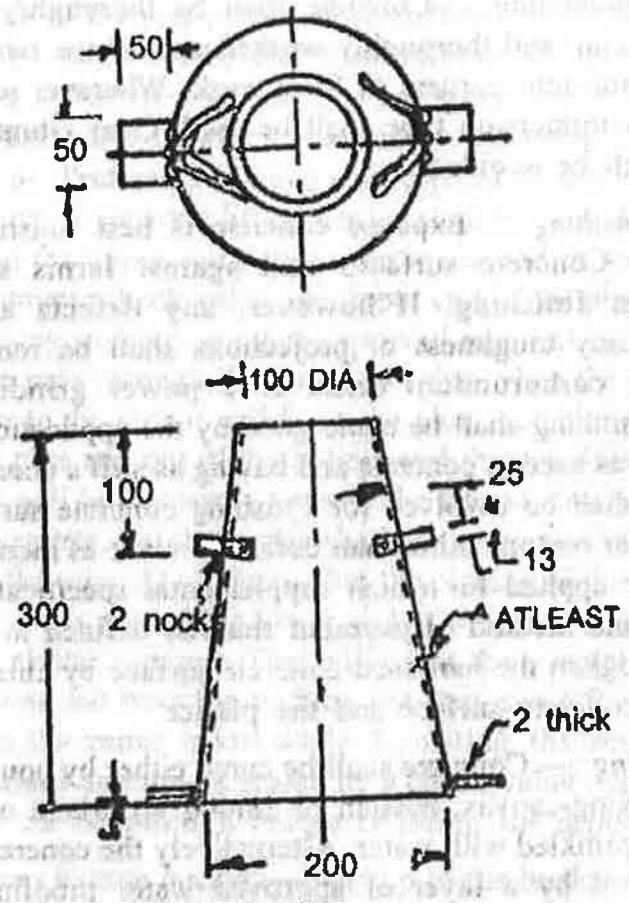
402.9.1.1. *Apparatus* :

(a) *Mould* :—The mould for the test specimen shall be in the form of frustrum of a cone having the following internal dimensions.

Dimensions	*mm.*
Bottom diameter	200
Top diameter	100
Height	300

The mould shall be constructed of non-corroding metal (brass or aluminium shall not be used) of atleast 1.6mm. thickness and the top and bottom shall open and at right angles to the axis of the cone. The mould shall have a smooth internal surface. It shall be provided with suitable foot pieces and also handles to facilitate lifting it up in a vertical direction as required by the test. A mould provided with a suitable guide attachment may be used. A typical mould without the guide is shown in Fig. 402-1.

TYPICAL MOULD FOR SLUMP TEST



All dimensions in mm.

[Fig. 402.1]

(b) *Tamping rod* :—The tamping rod shall be of steel or other suitable material 16mm. in diameter, 600mm. long and rounded at one end.

402.9.1.2. *Sampling* :—If this test is being carried out in the field the sample of freshly mixed concrete shall be used. In the case of concrete containing aggregate of maximum size more than 40mm. the concrete shall be wet sieved through 4mm. screens to exclude particles bigger than 40mm.

402.9.1.3. *Procedure* :—The internal surface of the mould shall be thoroughly cleaned and freed from superfluous moisture and any set concrete before commencing the test. The mould shall be placed on a smooth horizontal, rigid and non-absorbent surface, such as a carefully levelled metal plate the mould being firmly held in place while it is being filled. The mould shall be filled in 4 layers each approximately one quarter of the height of the mould. Each layer shall be tamped with 25 strokes of the rounded end of the tamping rod. The strokes shall be distributed in a uniform manner over the cross-section of the mould and for the second and subsequent layers shall penetrate into the under laying layer. The bottom layer shall be tamped throughout its depth. After the top layer has been rodded the concrete shall be struck off level with a trowel or the tamping rod, so that the mould is exactly filled. Any mortar which has leaked out between the mould and the base plate shall be cleaned away. The mould shall be removed from the concrete immediately by raising it slowly and carefully in a vertical direction. This allows the concrete to slump/subside and the slump shall be measured immediately by determining the difference between the height of the mould and that of the highest point of the slumped concrete. The above operations shall carried out at a place free from vibration or shock and within a period of 2 minutes after sampling. Any specimen which collapses or shears off laterally gives incorrect results. If this occurs the test shall be repeated with another sample. If in the repeat test also the specimen shears, the slump shall be measured and the fact that the specimen has sheared shall be recorded.

402.9.1.4. Very good indication of the cohesiveness and workability of the mix can be obtained, if after the slump measurement has been completed the side of the concrete is tapped gently with the tamping rod. A well proportioned concrete which has an appreciable slump will gradually slump further, but if the mix is harsh it is likely to fall apart.

402.9.2. *Compressive strength test* :—All the tests shall be done on hardened concrete in accordance with IS : 516-1959.

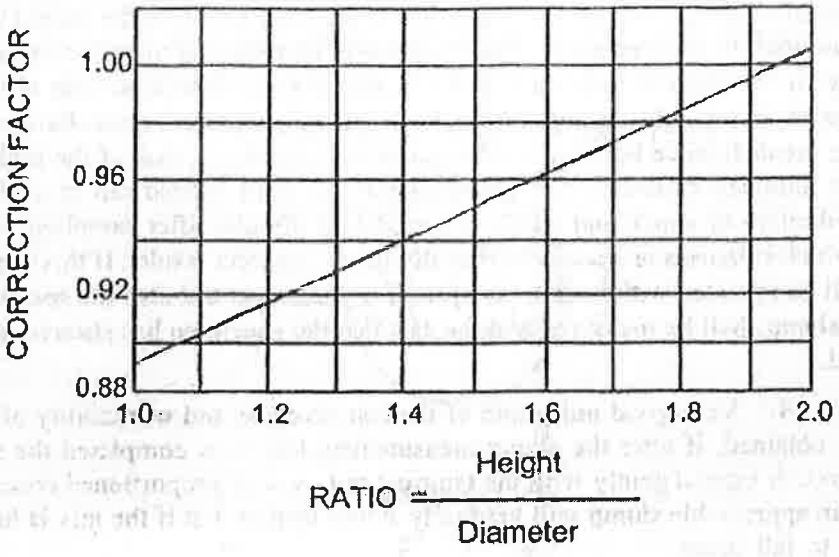
402.9.2.1. *Cube test* :

(a) *Size of cubes* :—In the works test with the approval of the Executive Engineer 100mm. cubes may be used in place of 150mm. cubes provided the maximum nominal size of the aggregate does not exceed 20mm. Even the use of 150mm. cubes shall normally be restricted to concrete having a maximum nominal size of aggregate not exceeding 40mm. Where concrete with aggregates larger than 40mm. size is required to be tested the size of cubes shall be specified by the Executive Engineer keeping in view that generally the length of the side of the cube shall be about four times the maximum nominal size of the aggregate in the concrete constituting the cube specimen. Alternatively 150mm. cube specimens may be used for such concrete by wet screening and removing aggregate pieces larger than 40mm. size.

(b) *Strength in relation to the size of the cube* :—When 100mm. cubes are used the values obtained from tests on 100mm. cubes shall be reduced to the extent established by comparative preliminary tests with 100mm. and 150mm. cubes (or in the absence of such comparative tests by 10 per cent of the value determined from the tests) in order to give the equivalent strength for 150mm. cubes. Where cubes larger than 150mm. are adopted generally no modification is necessary unless otherwise specified by the Executive Engineer.

402.9.2.2. *Cylinder Test* :—Compressive strength test may with the approval of the Executive Engineer be conducted on 150mm. diametre and 300mm. high cylinders in accordance with IS : 5-6-1959 instead of on cubes. Where cylinder strength figures are adopted the compressive strength figures given above shall be modified according to the formula :

Minimum cylinder compressive strength required = 0.8 compressive strength specified for 150mm. cubes.



[Fig. No. 402.2]

CORRECTION FACTOR HEIGHT/DIAMETER RATIO OF A CORE

402.9.2.3. *Core Test* :

Core specimen **:—Core specimen for the determination of compressive strength shall be extracted from hardened concrete by using a diamond core bit or other suitable means. The diametre of the specimen shall preferably be atleast three times and in no case less than two times the nominal maximum size of the coarse aggregate. The length of the specimen shall be about twice its diametre and in no case less than the diametre. In case the height/diametre ratio is less than 20 the correction factor shown in Fig. 402.2 shall be applied to get the cylinder compressive strength. The corresponding cube strength shall be then got by adopting the formula in clause 402.9.2.2.**

402.9.3. *Modulus of rupture test* :—The test shall be done in accordance with IS : 516-1959.

402.10. Sample, size, sampling frequency and acceptance criteria :— The number of test specimens required, the frequency of sampling and the criteria for acceptance of concrete as conforming to the specified grade shall be in accordance with Table V of IS : 456-1964 for both controlled and ordinary concrete.

402.11. Measurement :—This shall conform to clause 401.7.

402.12. Rate :—This shall conform to clause 401.8. The rate shall include cost of reinforcements also.

Specification No. 403

Reinforced, cement, concrete work

403.1. General :—Unless otherwise specified, R.C.C. work shall be done in accordance with IS : 456-1964 as revised from time to time.

403.1.1. *Terminology* :—This shall conform to SS : 402.

403.2. Materials :

403.2.1. *Coarse aggregate* :—The aggregate shall conform to SS : 108.

403.2.2. *Sand* :— Sand shall conform to SS : 110.

403.2.3. **Cement** :—Cement shall conform to SS : 112.

403.2.4. **Water** :—Water to be used shall conform to SS : 129.

403.2.5. **Reinforcing steel** :—Steel used for reinforcement shall conform to SS : 126.

403.3. Preparation and Laying of reinforcement :—

403.3.1. The reinforcement of the specified size and type shall be cut and bent in accordance with the bar bending schedule.

403.3.2. The reinforcement shall be located exactly in accordance with the drawings and securely tied together with soft iron binding wire of suitable thickness or tackwelded.

403.3.3. Proper care shall be taken by supporting the reinforcement on suitable precast cement mortar blocks of the required thickness at suitable intervals.

403.4. Splices :

403.4.1. As far as possible, reinforcement shall be of full length, but where this is not possible the reinforcement may be spliced by one of the following methods as instructed by the Executive Engineer. (All splices shall be properly staggered) :

(a) Lapping with or without hooks,

(b) Thread connections with bolts and nuts,

(c) Welding.

403.4.2. Where welding is done, representative samples from the welded joint shall be tested if so required by the Executive Engineer before the reinforcement is laid.

403.5. Form Work :

403.5.1. Form work shall conform to the shape, lines and dimensions as shown on the plans and shall be so constructed as to remain sufficiently rigid during the placing and compacting of the concrete. The joints shall be tight and shall permit no leakage of cement slurry.

403.5.2. Suitable struts or stiffeners or tiers shall be used for the form work wherever necessary.

403.5.3. All supports shall be properly braced and cross-braced in two directions.

403.5.4. All splices and braces shall be secured by bolting unless specially instructed otherwise.

403.5.5. All struts shall be firmly supported against settlement and slipping by suitable means as directed.

403.5.6. All supports shall be cut square at both ends and firmly supported against settlement and slipping. When the form work is supported on soils, planks, sleepers, etc., shall be used properly disperse the load. In case the supports rest on already completed beam or slab, suitable props shall be provided under the later.

403.5.7. The form work shall be of well seasoned timber or steel. When timber forms are used unless otherwise specified they shall be lined with M.S. sheets or other suitable smooth faced non-absorbent material as specified. Supports may be of timber or steel. Suitable wedges in pairs to facilitate adjustment and subsequent releasing of forms shall be provided preferably at the upper end of the supports. The details of the proposed form work and supports shall be submitted to the Executive Engineer and got approved before erection. Before laying the reinforcement the forms shall be thoroughly cleaned and lightly oiled unless any other treatment is specified.

403.5.8. In case of columns, retaining walls or other deep vertical components the height of the column shall facilitate easy placement and compaction of concrete and suitable arrangements may be made of securing the form to the already poured concrete for placing the subsequent lifts. No steel ties or wires used for securing this form work shall be left exposed on the face of the finished work.

403.5.9. Suitable inserts for blockouts or electrical and other service fixtures where necessary shall be provided in the required locations as specified.

403.6. Placing of the Concrete :

403.6.1. Concrete shall be thoroughly completed by rodding or by the use of vibrators (e.g., by means of suitable immersion, form, pan or screed vibrators). When vibrators are used concrete shall have suitable consistency and over vibration shall be avoided.

403.6.2. Before laying the concrete the form work with the reinforcement in place shall be inspected and approved by the Executive Engineer.

403.6.3. Care shall be taken to work the concrete thoroughly alround the reinforcement particularly in congested locations.

403.7. Construction Joints :

403.7.1. Vertical joints in floor and roof slabs shall be provided in the case of long buildings of more than 30m. in length, specially when the widths or depths of such building are less than 15m. and when narrow corridors connect blocks of relatively greater widths. The most suitable positions for such vertical joints are where the corridors take-off from inner blocks. On soils such as black cotton, such joints are more essential, shall be invariably provided at the places shown in the drawings or as directed by the Executive Engineer.

403.7.2. *Location of construction Joints* :

403.7.2.1. Construction joints when necessary shall be located as follows :

In the main beams over the centre of supports.

403.7.2.2. No vertical joints shall be permitted in case of main beams. In other cases they shall be provided if necessary in the following locations :

(a) in subsidiary beams at mid span ;

(b) in the case of slabs, the joints wherever possible shall be parallel to the main reinforcement in the case of one way reinforced slabs and over the centre of supporting beams or walls in other cases.

403.7.2.3. In general the joints shall not be provided in locations of considerable shear or under concentrated loads.

403.7.2.4. Suitable water stops as specified shall be provided in the case of water retaining structures.

403.8. Expansion Joints :

403.8.1. Wherever required, expansion joints shall be provided in accordance with the drawings.

403.8.2. Expansion joints shall be provided in the case of very long structures at locations of large variation in the height or width of the structure or where differences in foundation conditions are involved.

403.8.3. They shall be constructed in accordance with the drawings or as directed by the Executive Engineer.

403.9. Bearings of R.C.C. Slabs and Beams :

403.9.1. Where supports are not monolithic with the beam or slab the bearing surface shall be plastered with cement mortar (1 : 3) with the craft paper laid over the plaster before laying the concrete.

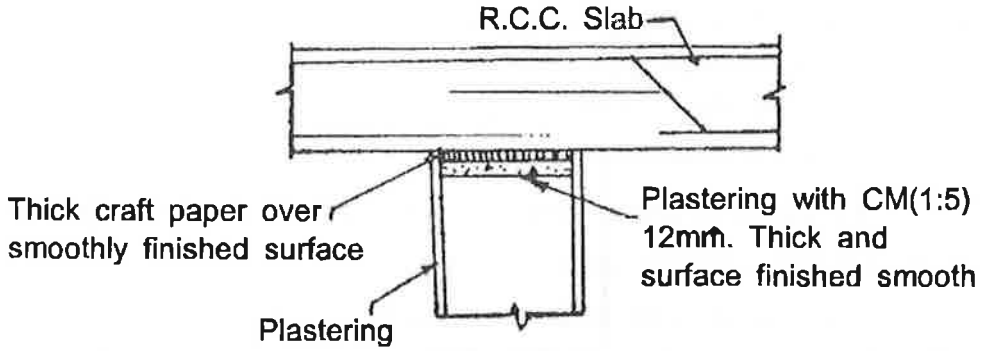
403.9.2. The vertical face of the masonry rebate at bearings shall be plastered smooth with C.M. (1 : 3). A gap of 12 mm. wide shall be left between the vertical face of the masonry and the beam face. This space shall be filled with a filler in the form of pads before the concrete is laid. This is illustrated by Figures. (Fig.403-1 and Fig. 403-2).

403.10. Removal of Form-work :

403.10.1. All form-work shall be removed without causing any shocks or vibrations to the structure.

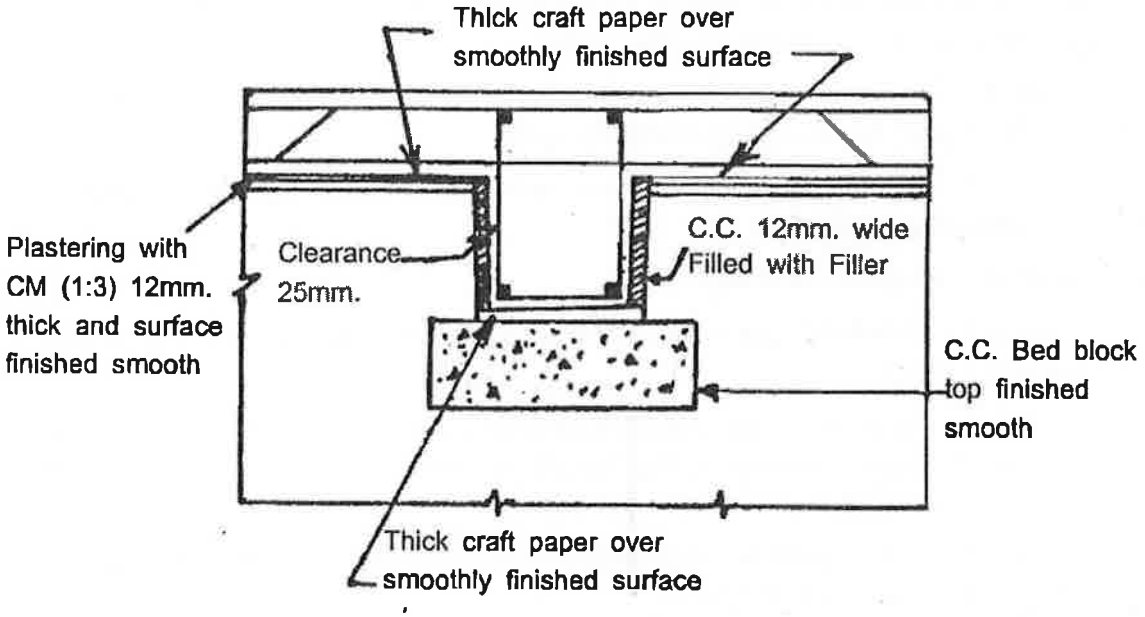
403.10.2. After the expiry of the period specified in clause 403.10.3 the wedges at the supports shall be loosened and the concrete watched for any distress after which the supports shall be completely removed.

SLAB BEARING OVER WALL



[Fig. 403.1]

R.C.C. T—BEAM AND SLAB BEARING OVER WALL



[Fig. 403.2]

403.10.3. In the case of big works where earlier removal of shuttering is necessary for economy in shuttering, the time limits may be deviated from on the approval of the Executive Engineer who will then give his orders based on the merits of each individual case. In deciding the time limit the following table which gives the minimum intervals of time between the placing of concrete and striking of the shutters may be used as a guidance. (In case this table is proposed to be followed it will be definitely specified so in the tender notice).

Table No. 403-A

Removal of shuttering		*Normal portland cement concrete placed in normal weather conditions, (days)*
(a) Walls, columns and vertical sides of beams and slabs	—	24 to 48 hours
(b) Removal of props to slabs :		
(i) Spanning upto 4.5. metres	—	7 days
(ii) Spanning over 4.5. metres	—	14 days
(c) Removal of props to beams and arches :		
(i) Spanning upto 6 metres	—	14 days
(ii) Spanning over 6 metres	—	21 days

403.10.4. In the case of cold wether it may be necessary to increase the above periods as directed by the Executive Engineer.

403.11. The structure shall not be put to normal use earlier than 28 days after completion.

403.12. Load testing of structures :

403.12.1. Loading tests on a completed structure shall be made if required by the specification or by the Executive Engineer in the event of a reasonable doubt as to the adequacy of the strength of the structure. Such tests shall be made after the expiry of 56 days of effective hardening of the concrete.

403.12.2. In such tests superimposed tests load on any structure shall unless otherwise specified be equal to one and quarter times the specified superimposed load for which such structure has been designed and this load shall be maintained for a period of 24 hours before removal. During the test struts strong enough to take the whole load shall be placed in position leaving a gap under the members.

403.12.3. If within 24 hours of the removal of the load the structure does not show a recovery of at least 75 per cent of the maximum deflection shown during the 24 hours under load, the test loading shall be repeated after a lapse of at least 72 hours. The structure shall be considered to have passed the test if the recovery after the second test is at least 75 per cent of the maximum deflection shown during the second test.

403.12.4. If the reinforced concrete structure satisfies the tests made, the payment for the labour involved in the test loading shall be made to the contractor under clause 63 of "Preliminary Specifications". If the reinforced concrete does not satisfy the tests no payment shall be made for the test and the whole work shall be liable for rejection and shall be redone at the contractor's expense. Thereby the contractor shall not be absolved from his liabilities under the "Rate of progress" clause in the "Articles of Agreement" to stick up to the original programme of completion of the work in time.

403.12.5. If during the test or upon removal of the load the member shows signs of weakness or faulty construction it shall be reconstructed or strengthened as may be ordered by the Executive Engineer at the contractor's cost.

403.13. Measurement :—This shall conform to clause 401.7. Measurement and check measurement of reinforcement shall be done before laying the concrete.

403.14. Rate :—The unit rate shall usually be per cu.m. or in the case of floors and roofs it may be per sq.m. of a specified thickness. The unit rate shall include complete execution of the work built in place inclusive of cost of materials, tools and plant, forms, finishing, curing and all other works involved in complying with this specification and the addendum specifications if any and the contract drawings. Extra leads and lifts shall be paid for separately. Where tests are specified by the Department the cost of testing shall be borne by the department, except where the materials have failed in which case the cost of such tests shall be borne by the contractor or supplier in addition to the rejection of the materials and redoing of the work at his expense.

SECTION 5

STANDARD SPECIFICATIONS FOR BRICK MASONRY

Specification No. 501

Brick Masonry - General

501.1. Terminology :—

501.1.1. *Quoin* :—An external corner in brick work, the term may also denote the masonry unit used to form the quoin.

501.1.2. *Squint* :—A brick of special shape used at an oblique quoin. (See Fig. 571-1A).

501.1.3. *Bat* :—Any portion of a brick, cut or broken across its length usually known according to its fraction from the whole size, as for example half bats, three fourth bats, etc.

501.1.4. *Closer* :—Part of a brick either manufactured or cut from a whole brick and used to maintain bond.

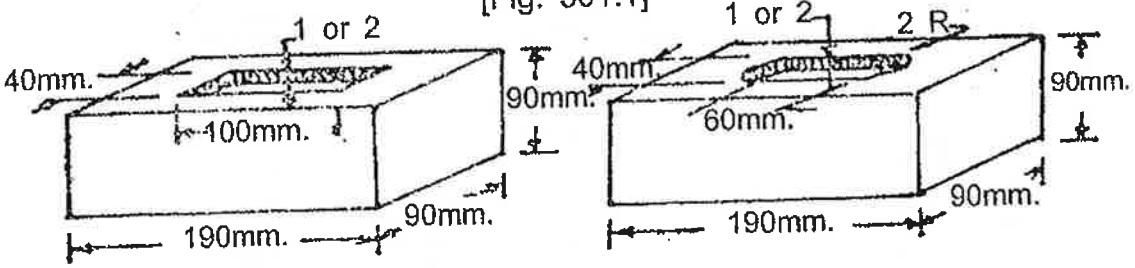
Bevelled closer—Illustrated in Fig. 501-IB.

King closer—Illustrated in Fig. 501-IC.

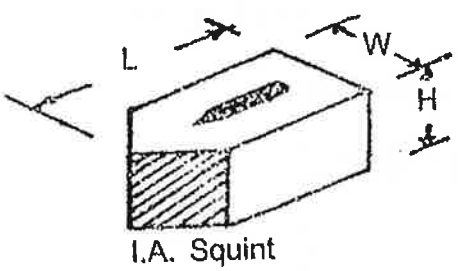
Queen closer—Illustrated in Fig. 501-ID.

DIFFERENT TYPES OF PART-BRICKS

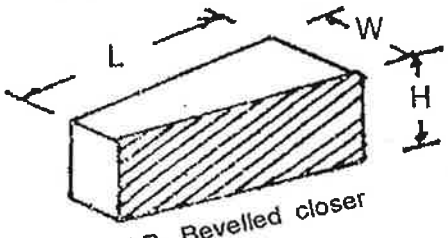
[Fig. 501.1]



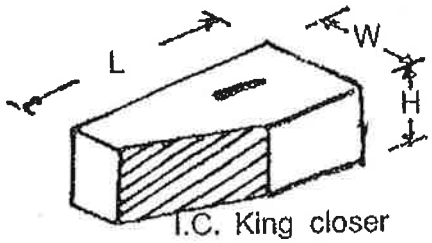
SIZES OF FULL BRICKS



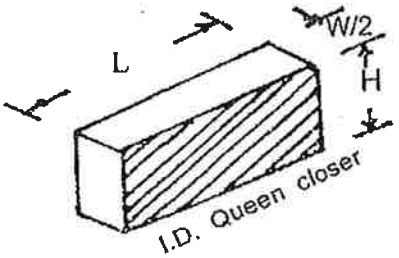
I.A. Squint



I.B. Bevelled closer



I.C. King closer



I.D. Queen closer

L = Legnth of Modular Brick
W = Width of Modular Brick
H = Height of Modular Brick

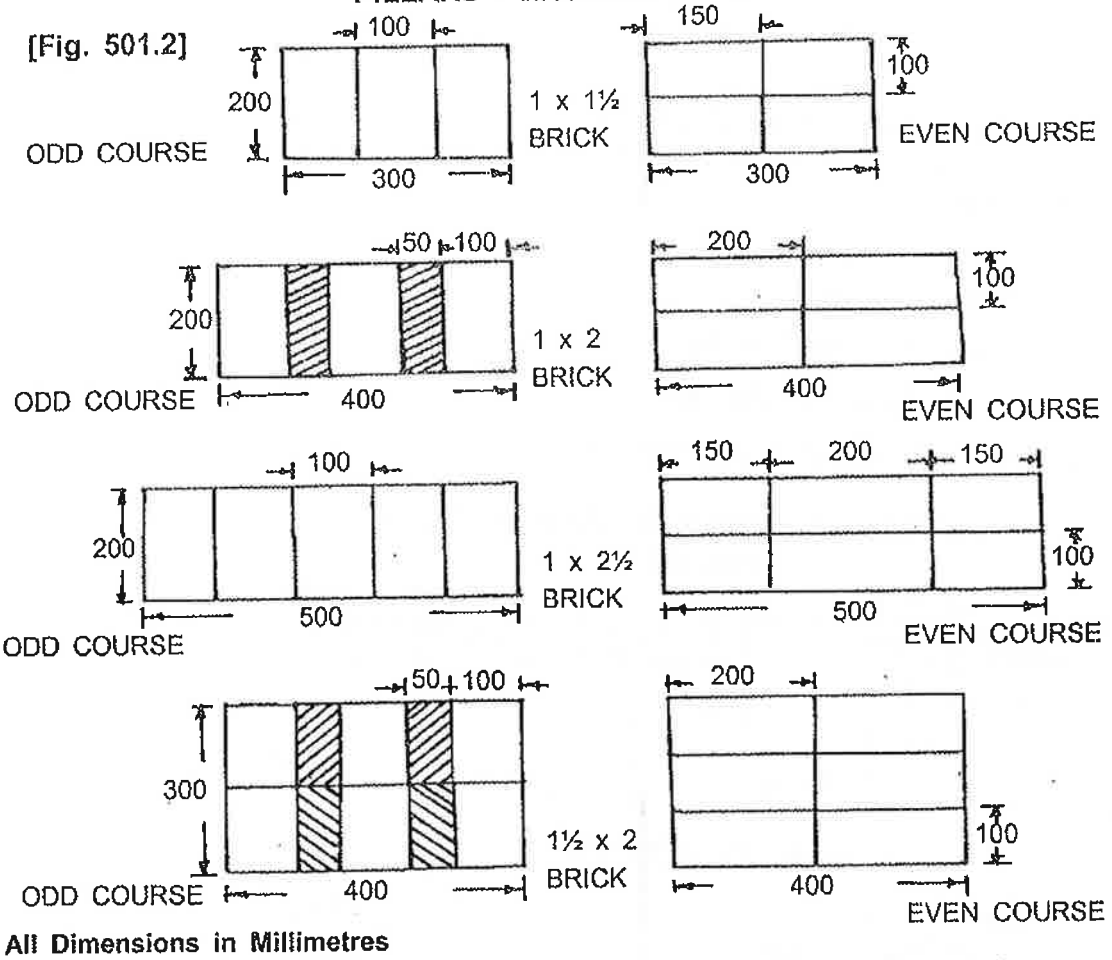
501.2. Materials :

501.2.1. *Bricks* :—Unless otherwise specified common burnt clay bricks shall conform to SS : 102.

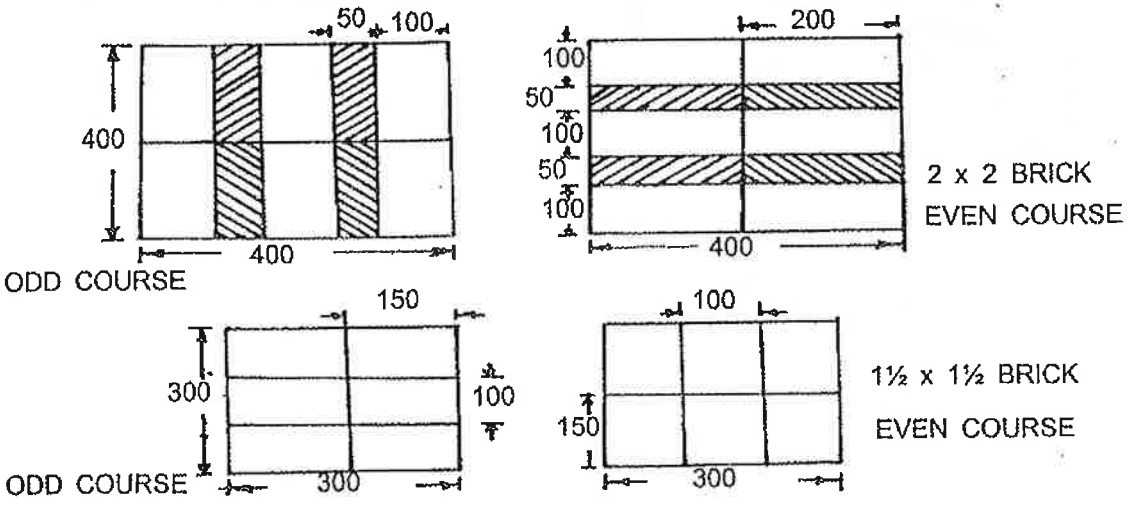
501.2.2. *Mortar* :—This shall be specified type and shall conform to SSs. : 113 to 116.

PILLARS - ENGLISH BOND

[Fig. 501.2]



All Dimensions in Millimetres



501.3. Joints in Brick work :—The thickness of joints in the case of masonry with first class bricks shall not be more than 10mm., and in the case of masonry with second class bricks shall not be more than 12mm.

501.4. Scaffolding :

501.4.1. Scaffolding shall be designed to withstand all the dead, live, and impact loads which are likely to come on them. They shall also be so designed to ensure the safety of the workmen using them and shall conform in all respects to the requirements of the relevant building regulations on safety, health, and welfare, and also the local building bye-laws.

501.4.2. For exposed brick work or title work double scaffolding having two sets of vertical supports shall be provided. The supports shall be sound and strongly tied together with horizontal pieces over which the scaffolding planks shall be fixed. For brick masonry to be covered with plaster, single scaffolding shall be allowed. In this case, the inner end of the horizontal scaffolding pole shall rest in a hole provided in the header course only. Only one header for each pole shall be left out. Such holes however shall not be allowed in pillars under one metre in width, or immediately near the skew backs, of arches. The holes left in masonry work for supporting the scaffoldings shall be filled and made good, before plastering.

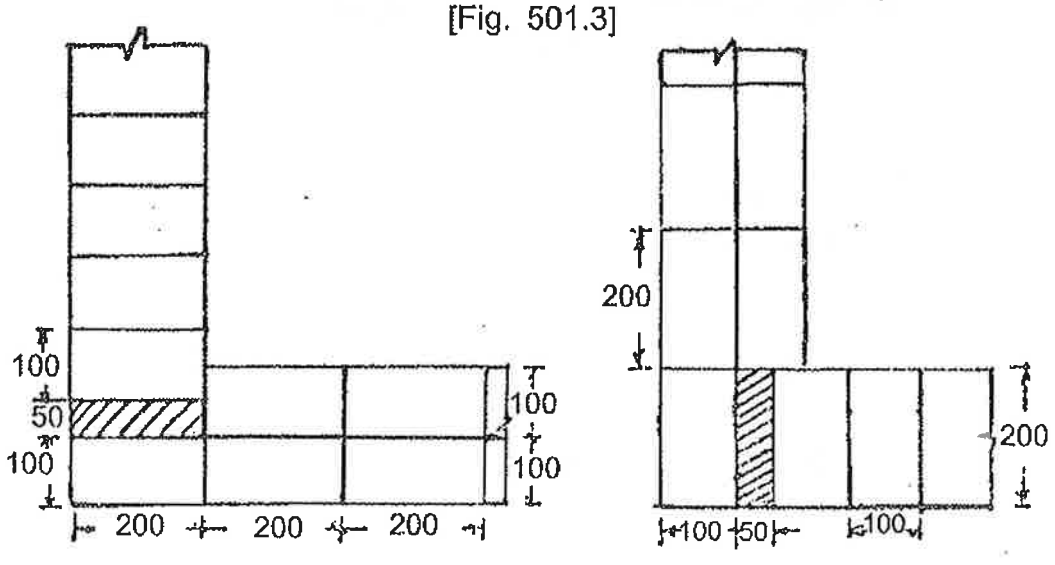
501.4.3. The contractor shall be responsible for providing and maintaining sufficiently strong scaffolding so as to withstand all loads likely to come upon it.

501.5. Soaking of Bricks :

501.5.1. Bricks required for masonry in cement or composite lime mortars, shall be thoroughly soaked in clean water for atleast an hour in brick lined tanks of sufficient size immediately before use. The cessation of bubbles, when the bricks are immersed in water, is an indication of thorough soaking of bricks. The soaked bricks shall be kept on wooden planks or brick platforms to avoid contact with earth.

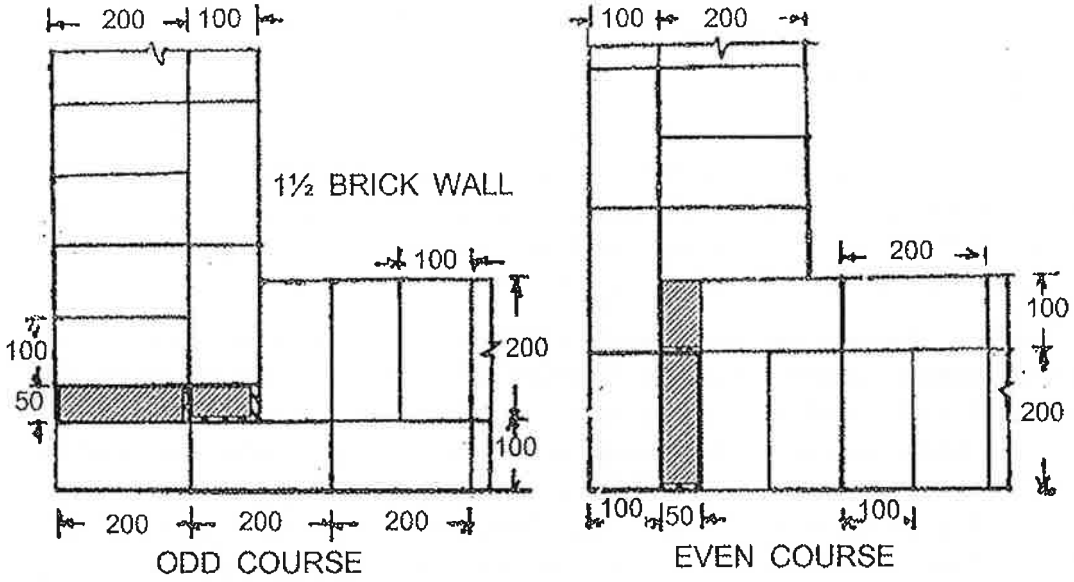
DETAILS OF BRICK BONDS (English Bond)

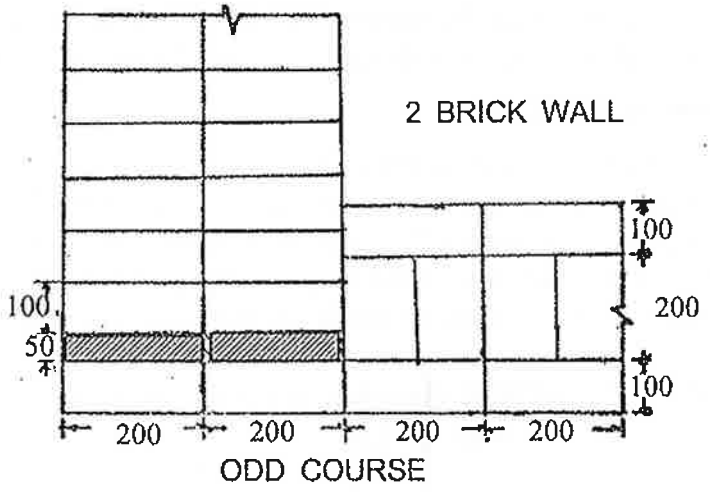
[Fig. 501.3]

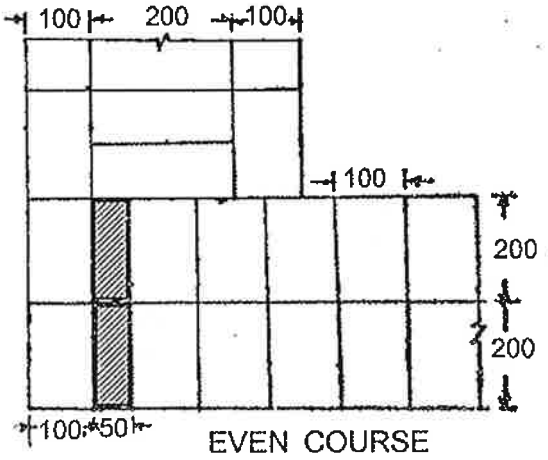


ODD COURSE EVEN COURSE

DETAILS OF BRICK BONDS (English Bond)

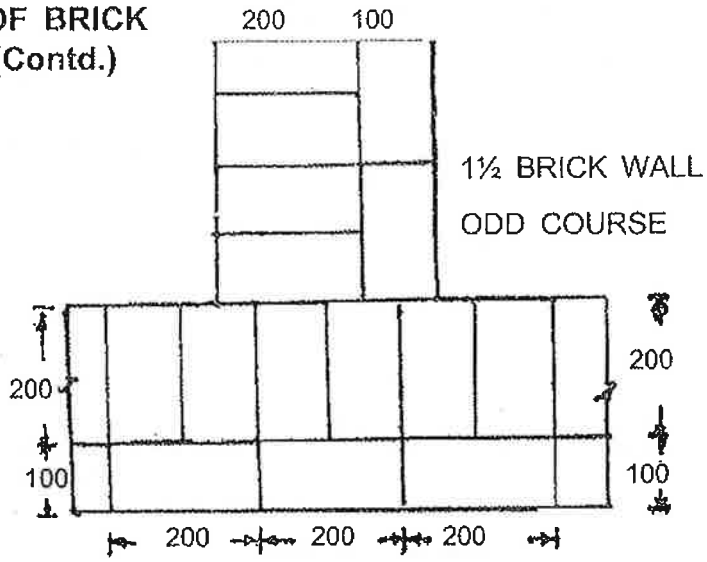


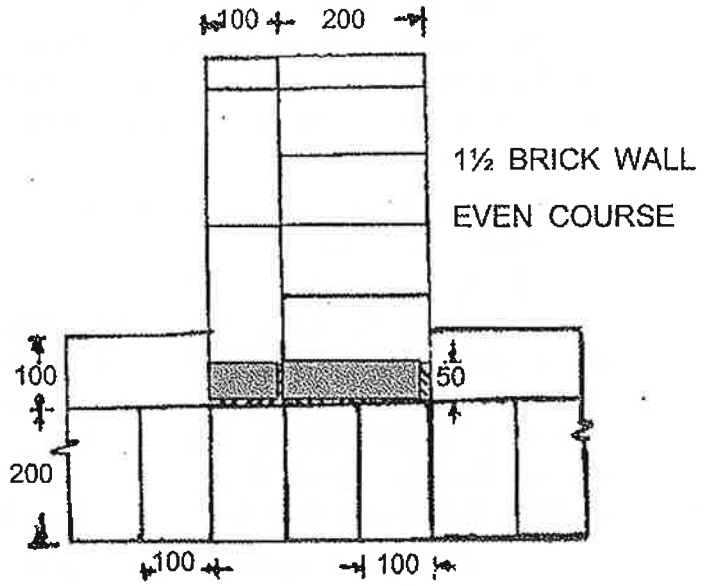




[Fig. 501.3]
All Dimensions in mm.

DETAILS OF BRICK BONDS (Contd.)





All Dimesions in mm.

[Fig. 501.4]

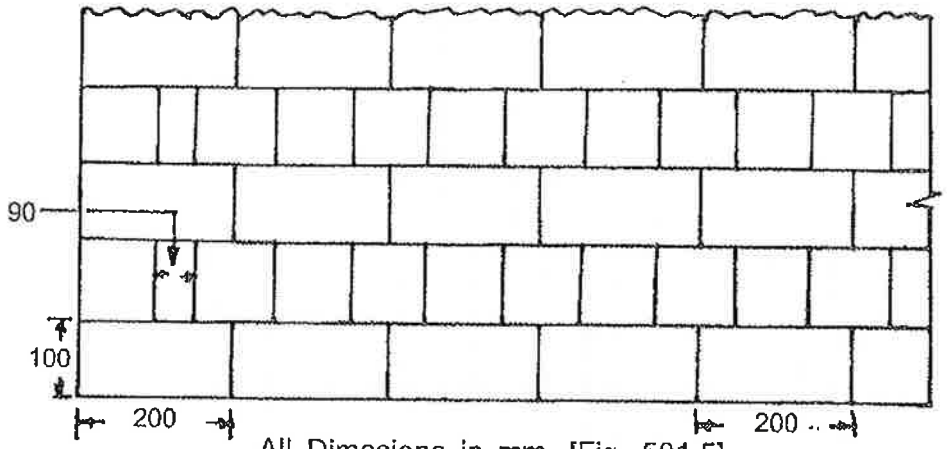
501.6. Laying :

501.6.1. *General* :

501.6.1.1. Brick work shall be laid in English bond as shown in Figures 501.2 to 501.5 unless specified otherwise. Half or cut bricks shall not be used except where necessary to complete the bond. Closers in such cases shall be cut to the required size and used near the ends of walls.

501.6.1.2. For exposed brick work selected bricks shall be used for the face.

DETAILS OF BRICK BONDS (Contd.)



All Dimesions in mm. [Fig. 501.5]

Elevation of Wall

501.6.1.3. *Method of laying* :—The bricks shall be laid as follows :

A layer of mortar shall be spread on full width for suitable length of the lower courses. Each brick shall first be laid so as to project over the one below, both at the end and at the side, then pressed into the mortar and shoved into final position, and set home by gentle tapping with the handle of a trowel or a wooden mallet. Its inside faces shall be buttered with mortar before the next brick is laid and pressed against it. On completion of a course, the vertical joint shall be fully filled from the top with mortar.

501.6.1.4. The walls shall be taken up truly plumb. All courses shall be laid truly horizontal and all vertical joints shall be truly vertical. Vertical joints in alternate courses shall come directly one over the other. The thickness of brick courses shall be kept uniform and for this purpose wooden straight edge with graduations giving thickness of each brick course included joint shall be used. The height of window sills, bottom of linte and such other important points in the height of the walls shall be marked on it. Bricks shall be laid with frogs upwards. A set of tools comprising of wooden straight edges, Mason's spirit level, square half metre rule, line and pins, string and plumb shall be kept on the site of work.

501.6.1.5. Both the faces of walls of thickness greater than 200mm. shall be kept in proper plan. All the connected brick work shall be carried up nearly at one level and no portion of the work shall be left more than one metre below the rest of the work. Where this is not possible the work shall be raked back according to bond (and not left toothed) at an angle not steeper thean 45°.

501.6.1.6. All iron fixtures, pipes, outlets of water, hold-fasts of doors and windows, etc., which are required to be built in walls shall be built in walls shall be embedded in cement mortar in cement concrete as specified, in their positions as the work proceeds. Cement concrete shall be paid for separately. Fixing of steel and Aluminium doors, windows and ventilators shall be done in accordance with SS : 1610.

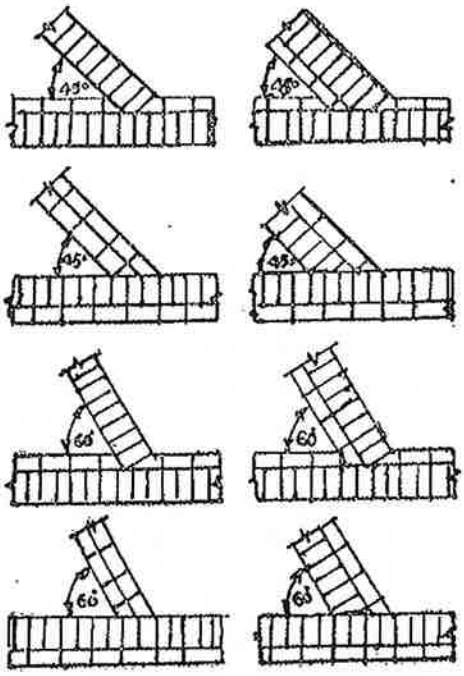
501.6.1.7. The flue of the chimney shall be pargetted that is plastered with mud gobar mortar (3 mud : 1 gobar) as the work proceeds.

501.6.1.8. *Joints* :—Bricks shall be so laid that all joints are quite full of mortar. The thickness of joints shall be as described in clause 501.3. The face joints shall be raked to a minimum depth of 15mm. by a jacking tool daily during the progress of work when the mortar is still green so as to provide proper key for the plaster or pointing to be done. Where plastering or pointing is not required to be done, the joints shall be struck flush and finished at the time of laying. The face of brick work shall be cleaned the very day after brick work is laid and all mortar droppings removed.

501.6.2. *Walls* :

501.6.2.1. All quoins shall be accurately constructed and the heights of the courses checked with storey rods as the work proceeds. In general quoin-bricks shall be headers and stretchers in alternate courses, the bond being established by placing a quoin closer next to the quoin header.

501.6.2.2. Acute and obtuse quoins shall be bonded, where practicable, in the same way as square quoins. Obtuse quoins shall be formed with squints showing a three-quarter brick on one face and a quarter brick on the other. See Figs. 501.6 and 507.7.



[Fig. 501.6]

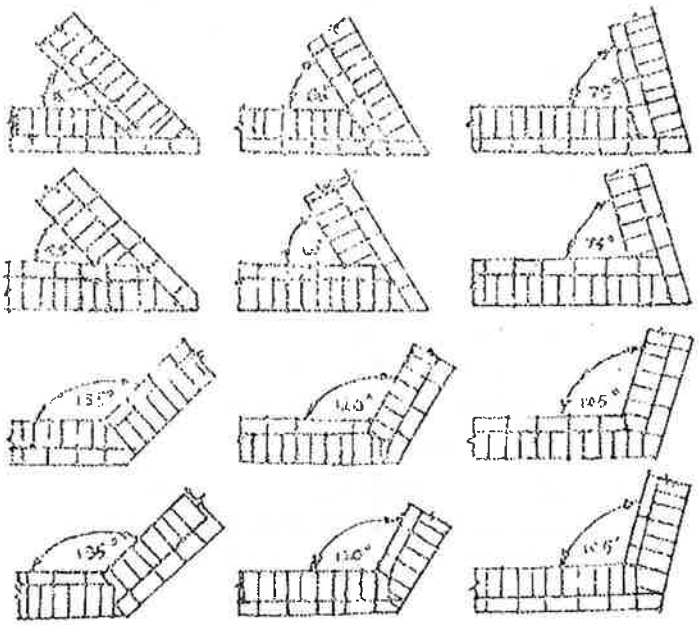
SQUINT JUNCTIONS IN ENGLISH BONDS

501.6.3. *Pilasters* :—These shall be so set out as to avoid broken bond.

501.6.4. *Openings* :

501.6.4.1. Door and window openings shall have arch work or lintels (stone or R.C.C.) over them of type as specified or as directed by the Executive Engineer where so specified a splay of (1 : 4) to (1 : 6) shall be provided in the jambs on inner sides, in cases where a door or window opens inward.

501.6.4.2. The depth of reveals and rebates shall, where, practicable, conform to standard brick sizes in order to avoid cutting of bricks and thereby weakening the work.



[Fig. 501.7]

ACUTE AND OBTUSE SQUINT QUOINS IN ENGLISH BONDS

501.6.4.3. The arrangement of bond at quoins at jambs of openings shall be symmetrical.

501.6.5. *Partitions* :—For half-brick portions to be keyed into main walls, indents shall be left in the later.

501.6.6. *Brick coping & cut brick corners* :—Care shall be taken that the bricks forming the top courses of all plinth parapets steps, the tops of walls below RCC slab and ends of walls shall be properly radiated and keyed into position as shown in Fig. 501-8.

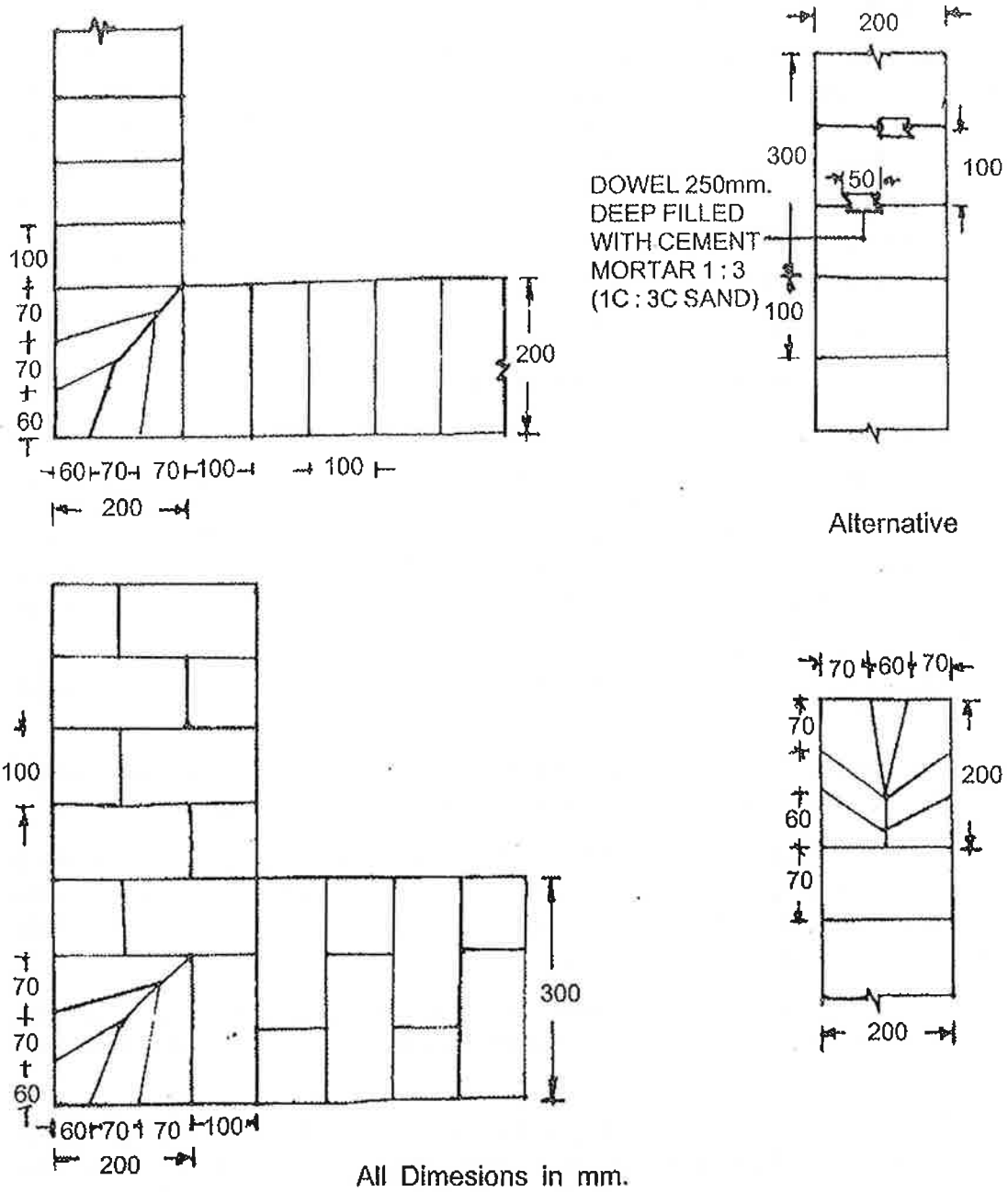
501.6.7. *Treatment at the ends of the beams and joists* :—The ends of all wooden beams, wooden roof trusses, etc., shall rest in recesses having 40mm. space, for the free circulation of air all round them and provided with perforated zinc sheeting. Where it is necessary to build ends of steel joists or other steel work into masonry, the masonry for atleast 130mm. all-round the imbedded steel shall be in cement mortar. Corbels under heavy beams, cornices or brick under joists and bed plates for beams, girders and trusses shall be built-in, as the work proceeds in accordance, with the drawings and addendum specifications, if any supplied.

501.7. Protection against damages :

501.7.1. Care shall be taken during construction that edges of jambs, sills, heads, etc., are not damaged.

501.7.2. The brick work shall be protected from the effects of sun, rain, frost, etc., (during the construction and until such time it is green and likely to be damaged) by covering with gunny bags, straw, etc.

501.8. Curing :—All masonry built with surki, hydraulic lime or cement mortar shall be kept wet for a period of two weeks after laying, unless a longer period is stipulated by the Executive Engineer.



[Fig. 501.8]

SKETCHES SHOWING TOP COURSES CUT BRICK CORNER [MARU CONA]

501.9. Final Finish :

501.9.1. Unless otherwise specified all brick work shall be plastered as per the relevant standard specification for plastering as mentioned in the Tender Schedules.

501.9.2. Where pointing is specified it shall be done as per the relevant standard specification for pointing as mentioned in the Tender Schedules. After the pointing is properly curved the wall face shall be washed clean and stains and adhering mortar lumps removed.

501.10. Measurement :

501.10.1. The quantity of brick work to be paid under this item shall be in number of cubic metres measured of the completed brick work and limiting the dimensions to those shown on the plans. Battered, tapered and curved portions shall be measured net. Dimensions shall be measured correct to 0.01 of a metre and the quantities of individual items worked out correct to 0.1 of a cubic metre respectively.

501.10.2. The work shall be measured in the following categories in convenient stages stating the height or depth :

(i) From foundation to plinth level,

(ii) From plinth level to floor two level,

(iii) From floor two level to floor three level and so on,

(iv) Brick work in the parapets shall be measured and paid for separately.

501.10.3. Corbels, string courses, projecting pilasters, aprons and sills, cornices, drip courses, oversailing courses and other projections, etc., of splayed, bull-nosed or any other type or purpose made, or cut bricks shall be measured separately in running metres stating the dimensions of each.

501.10.4. No deductions shall be made, nor any extra payment made for the following:

(i) Ends of dissimilar materials (i.e., joists, beams, posts, girders, rafters, purlins, trusses, corbels, steps, etc.) each 0.05m^2 in section or less.

(ii) Openings each upto 0.01m^2, (in calculating the area of the openings any separate lintels or sills shall be included along with the size of the openings but the end portions of the lintels shall be excluded and the extra widths of the rebated reveals if any shall also be excluded).

(iii) Wall plates and bed plates, bearings of slabs, chajjas, and the like, where the thickness does not exceed 100mm. and the bearing does not extend over the full thickness of the walls.

501.10.5. Masonry (excluding fire brick work) in chimney breasts, chimney stacks, smoke or air flues upto 0.20 sq.m. sectional area, shall be measured as solid and no extra payment shall be made for pargetting and corning such flues. Where flues exceed 0.20 sq.m. in sectional area, deductions shall be made for the same and pargetting and coning flues paid for separately.

501.10.6. Appertures for fire places shall not be deducted and extra labour shall not be measured, for splaying of jambs and throating.

501.11. Rate :—The Rate shall be for a unit of one cubic metre of finished work inclusive of conveyance, scaffolding, construction, quoins and jambs, smooth rubbing of joints, curing, etc., complete in all respects.

Specification No. 502

Brick in Lime Mortar

502.1. All relevant clauses of SS : 501 shall apply.

503 TACK COAT

503.1 Scope

This work shall consist of the application of a single coat of low viscosity liquid bituminous material to an existing bituminous, cement concrete or primed granular surface preparatory to the superimposition of a bituminous mix, when specified in the Contract or instructed by the Engineer. The work shall be carried out on a previously prepared surface in accordance with Clause 501.

503.2 Materials

503.2.1 *Binder*

The binder used for tack coat shall be Rapid Setting Bitumen Emulsion Grade RS-1 complying with IS:8887 or suitable low viscocity paving bitumen of VG 10 grade conforming to IS:73. The use of cutback bitumen (Medium Curing grade) as per IS:217 shall be restricted only for sites at sub-zero temperature or for emergency applications as directed by the Engineer. The type and grade of binder for tack coat shall be specified in the contract.

503.3 Weather and Seasonal Limitations

Bituminous material shall not be applied to a wet surface or during a dust storm or when the weather is foggy, rainy or windy or when the temperature in the shade is less than 10°C. Where the tack coat consists of emulsion, the surface shall be slightly damp, but not wet.

503.4 Construction

503.4.1 *Equipment*

The equipment used for tack coat shall be self-propelled or tractor towed bitumen pressure distributor equipped for spraying the material uniformly at a specified rate. Hand spraying of small areas, inaccessible to the distributor, or in narrow strips, shall be permitted with a pressure hand sprayer, or as directed by the Engineer.

503.4.2 *Preparation of base*

The surface on which the tack coat is to be applied shall be clean and free from dust, dirt, and any extraneous material, and be otherwise prepared in accordance with the requirements of Clause 501. Immediately before the application of the tack coat, the surface shall be swept clean with a mechanical broom, or by other means as directed by the Engineer.

503.4.3 *Application of tack coat*

The binder shall be sprayed on the base at the rate specified in **Table 500.2**. The normal range of spraying temperature for a bituminous emulsion shall be 20°C–70°C. Paving bitumen if used for tack coat shall be heated to an appropriate temperature in bitumen boilers to achieve viscocity less than 2 poise. The normal range of spraying temperature for a cutback shall be 50°C-80°C. It shall be the responsibility of the Contractor to carefully handle the inflammable bituminous cutback material so as to safeguard against any fire mishap. The binder shall be applied uniformly with the aid of either self-propelled tractor towed bitumen pressure distributor capable of spraying bitumen at specified rates and temperature so as to

provide a uniformly unbroken spread of bitumen. Work should be planned so that no more than the necessary tack coat for the day's operation is placed on the surface. A spraying trial shall be carried out to demonstrate the efficacy of the equipment for uniformity of spread within specified tolerances.

Table 500.2 Rate of Application of Tack Coat

	Type of Surface Emulsion	Rate of Spray of Binder
		(kg/m²)
i)	Normal bituminous surfaces	0.20 to 0.25
ii)	Dry and hungry bituminous surfaces	0.25 to 0.30
iii)	Granular surfaces treated with primer	0.25 to 0.30
iv)	Cement Concrete Pavement	0.30 to 0.35

503.4.4 *Curing of tack coat*

The tack coat of emulsion shall be left to cure until all the volatiles have evaporated before any subsequent construction is started. No plant or vehicles other than essentially required for construction shall be allowed on the tack coat.

503.5 Quality Control of Work

For control of the quality of materials supplied and the works carried out, the relevant provisions of Section 1800 shall apply.

503.6 Arrangements for Traffic

During the period of construction, arrangements for traffic shall be made in accordance with the provisions of Section 100.

503.7 Measurements for Payment

Tack coat shall be measured in terms of surface area of application in square metres.

503.8 Rate

The contract unit rate for tack coat shall be payment in full for carrying out the required operations including for all components listed in Clause 401.7 and as applicable to the work specified in these Specifications.

Specification No. 901

Plastering - General

901.1. Terminology :

901.1.1. Properties :

(a) Rendering :-The application of plaster.

901.1.2. Workmanship:

(a) Daubing :-Operation of filling in hollows in the surface of a wall with mortar as a preliminary plastering.

(b) Hacking:-The process of making a surface rough by chiselling in order to provide a key for plaster work.

901.1.3. Defects:

(a) Cracking:-The development of one or more fissures in the plaster, not assignable to structural cause.

(b) Crazing -The development of series of hair cracks on the finished surface, known as 'map crazing' when it forms a haphazard pattern over the surface affected.

901.2. Programme of work in relation to Plastering:

901.2.1. Construction operation such as construction of masonry, the encasement of steel columns and beams with concrete etc., requiring subsequent plastering, shall be so programmed that they are sufficiently cured and dry to receive the plaster without subsequent damage to plaster or decoration to the plaster.

901.2.1.1. All service pipes, conduits, cables, etc., that are to be embedded in masonry work and covered with plaster shall be completed and suitably protected against corrosion, where necessary, before plastering is begun.

901.2.2. Operations during plastering-Where other operations are required to proceed simultaneously with plastering special care shall be taken to programme the work so as to cause minimum interference.

901.2.3. Plastering operation shall be so scheduled, as to allow sufficient interval between successive coats.

901.2.4. Operations after plastering-Care shall be taken to ensure that subsequent operations do not cause damage to the plaster work.

901.3. Preparation of the Surface:

901.3.1. Roughening :-The roughening of the background improves the bond of plaster. This is particularly important in case of soffits and ceilings. A smooth surface shall be roughened by wire brushing if it is not hard or by hacking if it is hard. All joints shall be thoroughly raked. After roughening the surface care shall be taken to moisten the surface sufficiently before plastering as otherwise the freshly exposed surface may tend to absorb considerable amount of water from the plaster. In case of special backgrounds

wood lath, expanded metal lathing, wire netting, etc., may be fixed to provide key to the plaster.

901.3.2. Cleaning:-The surface to be plastered shall be thoroughly brushed to remove dust, loose particles of mortar etc., or effloresence where it has occurred.

901.3.3. Daubing :-Daubing shall be necessary where the background is very uneven and that unevenness cannot be made up in regular coat of plastering. The process of daubing consists in filling the holes and depressions with mortar of the same mix as per the first coat.

The patches of plaster thus done are left rough so that the subsequent coat of plaster would stick to it.

901.3.4. Wetting :-The surface shall be wetted evenly before applying the plaster. Care be taken to see that the surface is not too dry as this may cause lack of adhesion or excessive suction of water from the plaster. A fog-spray may be used for this work. As far as possible the plaster work shall be done under shade.

901.3.5. Control of cracking :-In case of discontinuity in backgrounds the portions shall be separated by a neat cut or a groove at the junction. Where such cutting or grooving is not practicable the plaster at such locations may be reinforced by providing a suitable scrim of jute or wire gauze or other materials as directed.

901.3.6. Control of surface crazing :-Adequate time intervals shall be provided between successive coats so that each undergoes a portion of its shrinkage before the next one is applied. Care shall be taken to prevent rapid drying of the final or finishing coat.

901.4. Measurement :-All linear measurements shall be in metres, correct to 0.01 of a metre and areas, shall be worked out in metres correct to 0.01 of a sq.m. For jambs, soffits, sills, openings not exceeding 0.5m² each in area, ends of joists, beams, posts, girders, steps etc., not exceeding 0.5m² each in area, openings not exceeding 3m² each deductions and additions shall be made in the following manner :-

a) No deductions shall be made for ends of joists, beams, posts, etc., and openings not exceeding 0.5m² each and no addition shall be made for reveals, jambs, soffits, sills, etc., of these openings nor for finishing the plaster around ends of joists, beams, posts, etc.

b) Deductions for openings exceeding 0.5 m² but not exceeding 3m² each shall be made as follows and no addition shall be made for reveals, jambs, soffits, sills, etc., of these openings:-

    1. When only one face is plastered no deductions shall be made.
    2. When both faces of wall are plastered with the same plaster deductions shall be made for one face only.
    3. When two faces of wall are plastered with different plasters or if one face is plastered and the other pointed deductions shall be made from the plaster or pointing on the side of frames for doors, windows, etc., on which the width of reveals is less than that on the other side, but no deductions shall be made on the other side.

c) In case of openings of area about $3m^2$ each deductions shall be made for the openings but jambs, soffits and sills shall be measured.

d) Ceilings shall be measured between the walls or partitions (the dimensions after plastering shall be taken). Cornices or coves if any shall be deducted and measured separately.

e) Where the beams are exposed under the ceilings shall be measured over beams and the plastered sides of beams shall be measured and added to plastering on ceilings.

f) Soffits or stairs shall be measured as plastering on ceilings. Flewings soffits shall be measured separately.

g) Ribs and mouldings on ceilings and beams more than the thickness of the plaster shall be measured separately as for cornices.

h) The measurements of lenghts of wall plastering shall be taken between walls or partitions (the dimensions after plastering shall be taken) and from the top of floor where there is no skirting or from top of skirting to the top of the wall for height. Cornices or coves if any shall be deducted and measured separately their lenghts being measured along the exposed face of the special at its centre line.

i) Sides of pilasters, projections, etc., shall be added to the plaster on walls.

901.5. Rate :- The unit rate shall be per 10 sq.m. of plastered area and shall include all necessary scaffolding, preparation of the surface, all materials, finishing and curing

Specification No. 903

Plastering with Cement Mortar one coat 12mm. or 20mm. including Fine Rendering

903.1. All relevant clauses of SS: 901 shall apply.

903.2. Cement mortar shall conform to SS: 115 and shall be of the specified proportions.

903.3. Application:- The plastering shall proceed in accordance with clauses 902.4.1 and 902.4.2 except that cement mortar shall conform to SS: 115 and of the specified portions shall be used instead of lime mortar and the final rendering shall be applied immediately afterwards.

903.4. Fine rendering- Neat portland cement slurry with a cream like consistency is applied as thinly uniformly as possible with a trowel and rubbed smooth.

903.5. Curing: The surface shall be watered for a period of at least 10 days.

Specification No. 1208
Painting with Ready Mixed Paint

1208.1. All relevant clauses of SS: 1201 shall apply.

1208.2. Paint-Ready mixed paints shall be of approved brand and make and of specified shades.

1208.3. Preparation of surface:

1208.3.1. New wood work:-This shall conform to clauses 1207.3.1.1. and 1207.3.1.2.

1208.3.2. New iron and steel work:-This shall conform to clause 1207.3.2

1208.3.3. New plastered surface :-This shall conform to clause 1207.3.3.

1208.3.4. Old wood work:-If the old paint is sound and firm and its removal is considered unnecessary the surface shall be rubbed down with pumice stone after it has been cleaned of all smoke and grease by washing with lime and rinsing with water and drying. All dust and loose paint shall be completely removed. The surface shall then be washed with soap and water.

1208.3.4.1. If the old painted surface is blistered or flaked badly old paint shall be completely removed as specified and such removal shall be paid for separately. Holes and cracks if any shall be stopped with glazier's putty or wood putty.

1208.3.5. Old iron and steel work:-If the old paint is sound and firm and its removal is considered unnecessary it shall be rubbed with wire brushes and any loosened paint taken off. All dust shall then be thoroughly wiped away.

1208.3.5.1. If the old painted surface is in bad condition and blistered and flaked the old paint shall be completely removed as specified and such removal shall be paid for separately.

1208.3.6. Old plastered surface:-If the old paint is firm and sound it shall be cleaned of grease, smoke, etc., and then all dust, dirt and loose paint removed as specified in clause 1208.3.4.

1208.3.6.1. If the old paint is badly blistered and flaked it shall be completely removed as specified in clause 1208.3.4.1.

1208.3.6.2. If before painting, any portion of the wall shows signs of dampness, the causes shall be investigated and the damp surface shall be properly treated. Such treatment shall be paid for separately. A thin coat of white lead if so required shall be applied on the wet or patchy portion of the surface before painting is undertaken and this shall be paid extra.

1208.4. Application :-This shall conform to clause 1201.4. The number of coats to be given shall be as specified in the description of the item.